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Report To The Reader

"Arizona's Transportation Dimension" was the theme of the 1980 Arizona Town Hall.

To provide the Town Hall participants with background information on the subject of transportation, the Arizona Academy, sponsor of the Town Hall, requested the College of Business at Arizona State University to develop a research report on the subject.

This issue of *Arizona Business* is devoted to some important aspects of that research. Four separate articles define the problems in highway financing, intercity and urban passenger transportation, as well as air and railroad transportation.

The first article by Dr. David Shrock, "Arizona's Highways: Crisis in the Making," presents a detailed analysis of Arizona's highway financing crisis. Dr. Shrock points out the complexity of the problem that involves funding through user charges as well as funding from general tax revenues — both of which are presently inadequate. He stresses that, "maintenance of an adequate road system is critical to Arizona's economy...The problem is how to generate the revenues necessary to cover the costs of desirable highway programs." The article outlines the recommendations of the Governor's Task Force, which demonstrate one approach to solving the problem.

The second article, "Urban and Intercity Passenger Transportation in Arizona," by Martin T. Farris evaluates the vehicles available for transportation, identifies criterion for evaluation of the system, and discusses the current degree of public commitment toward establishing a long-range transportation policy.

In the third article, "Arizona's Railroad System," Dr. T. F. Griffith points out that, "the rail mode is the most energy-efficient form of transport for many goods, especially long-distance movement of bulk goods...As energy efficiency becomes increasingly important...the railroads should benefit."

The final feature article in this transportation issue presents a view of air transportation, particularly as it relates to the recent deregulation. Dr. Norman Daniel and Dr. Douglas Cochran suggest that, "The overall development of commuter airline service in Arizona will depend on a wide variety of factors including economic conditions, safety records, and adequacy of airports.

Editor's Note: In the August/September issue, the headings for the Consumer Price Index and the Food Price Index on page 36 were inadvertently transposed. Also, the base for the Food Price Index should be 1967.

Arizona's Highways: Crisis in the Making

DAVID L. SHROCK

Editor's Note: This is the first of four major articles in this issue of Arizona Business on the subject of transportation in Arizona. In addition, the "Arizona Business Scene" presents an overview of the transportation industry in the state. For details on the background of this research, see "Report to the Reader," on page 2 of this issue.

A potential corollary exists between problems that have occurred in the nation's railroad system and problems that could occur in its system of highways. One of the major crises in recent United States transportation history has been the deterioration of a significant portion of the rights-of-way of many of the nation's railroads. This condition has resulted from inadequate spending for track maintenance and improvement, in a period of declining railroad profitability. This in turn has led to an increasing number of track-related railroad accidents, deteriorating service levels, and an ever larger price tag for bringing the roadbed up to standard.

A similar crisis could occur on the nation's highways. It is possible to defer maintenance of and additions to

facilities for a seemingly indefinite period of time without significant deterioration of service; but this is a false impression. As time passes, the deterioration and the corresponding costs required to correct system deficiencies increase more and more rapidly.

At present, the funding available for roadway construction and maintenance is rapidly falling below the level required to adequately maintain the country's system of highways, roads, and streets. The purpose of this article is to present an overview of the way streets and highways are financed, the reasons that funding is beginning to lag behind required levels of expenditures, and the nature of the potential crisis in the state of Arizona.

IMPORTANCE OF ARIZONA'S HIGHWAY SYSTEM

The need for continued improvement of Arizona's highways, roads, and streets is widely recognized. The problem is how to generate the revenues necessary to cover the costs of necessary highway programs. This article discusses the highway system in general, highway classification, funding mechanisms, needs, and possible solutions.

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A tribute to the quality of Arizona's existing system of roads and streets is that most of its citizens take them for granted. Unless the normal flow of traffic is interrupted by a freeway accident or by floods and the closing of major river crossings, highway travel will be considered a normal integral part of daily life. Only such interruptions, with their loss of convenience and increased vehicle operating costs, can effectively focus the public's attention on highway needs. Thus, the

relationship of Arizona's roads and streets to its economy and the daily life of its citizens is often overlooked.

The importance of this system to the state's economy cannot be overstated and can be seen to some extent in the distribution of energy use for transportation purposes, as shown in Table 1. National estimates show that 85 percent of intercity passenger movement is by auto and 25 percent of intercity freight movement is by truck. The similarities between the distribution patterns of energy use in Arizona and the United States suggest that these estimates do not understate the role of highway use in Arizona.¹ Indeed, one-third of the state's population is dependent on motor carriage for its surface movement of goods, and 404 Arizona communities, out of a total of 513, do not even receive rail service.² Furthermore, in those communities served by rail, virtually all shipments are handled by truck because the railroads, with the exception of AMTRAK's express service, have virtually eliminated small shipment service.

TABLE 1
DISTRIBUTION OF ENERGY USE BY
TRANSPORTATION SEGMENT

Transportation Segment	Arizona (Percentage)	United States (Percentage)
Automobile	51.4	50.0
Pickup and other truck	29.2	24.0
Bus	0.3	3.0
Highway total	80.9	77.0
Other	19.1	23.0
Total	100.0	100.0

Sources: *Arizona Transportation Energy Usage Patterns* (Phoenix: Arizona Department of Transportation (ADOT), December, 1977) cited in *Arizona State Highway System Plan—1978* (Phoenix: ADOT), pp. 34 and 37, and United States Department of Transportation statistics cited in Charles A. Taff, *Commercial Motor Transportation*, 6th ed. (Centreville, Md.: Cornell Maritime Press, 1980), p. 3.

Arizona has 38,420 miles of public roads and streets. Of this total, 6,362 miles are under state jurisdiction, 23,866 miles are under county jurisdiction, and 8,192 miles are under city jurisdiction. In addition, approximately 18,000 miles of roads are in national forests, parks, military reservations, and Indian lands and are the responsibility of federal agencies.³

In combination, these parts of the state's road structure provide the connecting links among homes, job centers, commercial centers, and recreation centers and provide the backbone for the state's overall transportation system.

HIGHWAY CLASSIFICATION BY USE

Arizona's highways, roads, and streets are classified in three categories, based on their principal uses. In the first category are roads classified as *arterials* — those routes accommodating long distance travel and heavy demand. Such roads, like the Black Canyon and Maricopa Freeways, provide the core for intercity travel and through travel or interregional travel in metropolitan areas. The second category includes roads classified as *collectors* because they serve to funnel traffic onto the arterials. The roads in the final category are classified as *local roads* and are used nearly exclusively for land access in rural, residential, commercial, and industrial areas. These usually fall under the jurisdiction of cities and counties. The state highway system includes most of the state's arterial highways and collector roads, including designated state highways and Arizona's segments of interstate and other United States highways.⁴ These latter roads receive the greatest demand and generate more miles of travel per mile of roadway than do local routes. However, without the access provided by local routes, the entire structure would be ineffective.

HIGHWAY FUNDING MECHANISMS

Funding of road systems is generally accomplished in one of two ways. The first method involves the collection of so-called user charges, such as gasoline taxes, from those using specific categories of highways, and subsequent application of those tax revenues to the maintenance and construction of those highways.⁵ Philosophically, this method suggests that the direct users of roadways benefit most, and therefore, should be responsible for funding road construction and maintenance. The second method involves financing highway expenditures from general tax revenues — income, sales, or property taxes, for example. Use of this financing method suggests that roadways are necessary for the public welfare and, therefore, should be paid for out of general funds. In practice, the first method has generally been applied to fund major intercity routes, such as the interstate and defense highway system; the second has been used to fund local routes, such as city streets and county roads.

A third method is also used occasionally for generating highway construction funds, most often at the local level. This method differs from the first two only in the way the initial funding for construction is raised. In this case, bonds are issued to generate required funds, and revenues from either user charges or general taxes are used to retire the debt. Principally, this changes the timing of

cash flows, making facility acquisition possible at an earlier date and at a potentially lower cost.⁶

To ensure that an adequate system of roadways capable of supporting commerce and the public welfare was developed, the policy of higher levels of government has been to provide support for the road building efforts of lower levels of government. For example, the federal government has provided aid to the states for construction of a limited number of intercity highways. The purpose of this support, which requires some matching state funds, has been to concentrate spending on highways that are essential to interstate commerce rather than to distribute the funds thinly for the support of many routes. The incentive for states to support federal roadbuilding goals has been the ability to construct more miles of highways for the same amount of in-state collected revenues. In all cases, the completed federal aid road systems have belonged to the states, which have become responsible for their maintenance.

The federal aid program began in 1912 with federal support amounting to one-third of the cost of construction of roads over which mail was carried. Over the years, the federal role has grown until support for roads included in the federal-aid system amounts to a minimum of 75 percent of the cost of construction, rising to a minimum of 90 percent for construction of segments of the interstate and defense highway system.⁷ This funding is drawn from the highway trust fund monies generated through federally collected user charges and amounted to \$6.4 billion for all purposes in 1978.⁸ User charges contributing to the highway trust fund include the following:⁹

- A four-cent per gallon tax on gasoline, diesel, and special fuels (except gasahol and fuel used by buses).
- A ten-cent per pound tax on tires and inner tubes (except those for buses).
- A five-cent per pound tax on tread rubber (except that for buses).
- A 10 percent tax on the wholesale price of trucks and trailers.
- An 8 percent tax on the manufacturer's wholesale price on truck parts and accessories.
- A six-cent per gallon tax on lubricating oil used for highway purposes (except that used in buses).
- A tax of three dollars per pound on the total gross weight of vehicles rated at more than 26,000 pounds gross weight.

Additionally, many states, including Arizona, provide local governments with a share of funds generated from user charges levied at the state level. This reflects a recognition of local road and street user benefits from

road use and results in a combination of the two previously discussed funding methods for the generation of local road and street support. In Arizona, funds collected in the highway user fund are allocated as follows: Arizona Department of Transportation (ADOT), 57 percent; cities, 17 percent; counties, 15 percent; and the Department of Public Safety (DPS), 11 percent. From July 1, 1978, through June 30, 1979, the highway user fund received over \$205 million in revenues.¹⁰ The user fund monies are generated from the following sources:¹¹

- An eight-cent per gallon tax on all fuel used on highways.
- Registration fees of eight dollars per vehicle, seven dollars of which is directed to the highway user fund and one dollar of which is allocated to the counties to cover administrative costs.
- Motor carrier taxes involving a tax on the gross receipts of commercial carriers, including 2½ percent for freight carriers and 2¼ percent for passenger carriers.
- Other sources include title fees, operator licenses, and permits for excess size and weight operations.

Finally, funds are raised at the county and city levels. This funding is either used to provide the matching funds required for federally supported projects or is combined with monies from the Arizona highway user fund and applied to locally sponsored projects. Funds generated by county governments in Arizona between July 1, 1978, and June 30, 1979, and applied to transportation uses were \$46.5 million; similar funds generated by city governments were \$122 million. Of this, roads and streets constructed by subdividers accounted for \$23.4 million of the county total and \$43 million of the city total.¹² Receipts for road and street use were generated from the following sources (excluding local shares of the highway user fund):¹³

- Special property taxes collected from property owners for roads and streets (counties only).
- Assessments collected from property owners to pay for streets in improvement districts.
- Appropriations from general and public works funds to be spent on roads and streets.
- Contributions or the amount of money subdividers pay for constructing new streets in accepted subdivisions.
- Miscellaneous receipts from sales of equipment, payment for work done for others, and similar sources.
- Bond proceeds from bonds issued during that fiscal year.
- Fees received from the United States Forest Service (counties only).

HIGHWAY SYSTEM NEEDS

Arizona's reliance on its system of highways, roads, and streets certainly will not decrease as the state's population and economy continue to grow. Meeting the needs generated by this growth will require continued efforts in four major areas, as follows:¹⁴

- Construction of new roads required to support growth or improvements to existing facilities requiring expansion, such as new traffic lanes required to relieve congestion, or reconstruction, such as necessitated by bridge replacement.
- Maintenance of existing facilities to an adequate level of serviceability, including filling potholes, street sweeping, and traffic sign maintenance, among other things.
- Pavement preservation involving pavement sealing and overlay necessary to extend the life of existing roadways.
- Operating functions not directly attributable to construction or maintenance, including planning and traffic engineering functions.

The level of expenditures required to maintain and expand Arizona's highway system at an adequate level of serviceability are obviously open to debate; estimates of need levels are often based on subjectively established priorities. This level of needs has been carefully analyzed by the Arizona Department of Transportation, through its biennial transportation needs study; and assessments were made by the Governor's Arizona Transportation Task Force. This article uses the estimate developed by the latter group as a basis for discussion. Based upon the task force survey of local government and Arizona Department of Transportation needs for the next decade, the cost estimates shown in Table 2 were developed. These estimates, adjusted for the effects of inflation, include costs for each of the four categories described above and for the Department of Public Safety, which draws its monies from the highway user fund.

The importance of continued efforts to maintain and improve Arizona's highway, road, and street system, and the magnitude of that effort, are reflected in the following task force assessments:¹⁵

Arizona's transportation system has been deteriorating for the past decade. Major segments of highways, streets and roads throughout the state have fallen into disrepair. Moreover, due to Arizona's rapidly expanding population, the transportation system's capacity has become increasingly inadequate. As a result, traffic congestion in urban areas has continually worsened...

The users of Arizona's highways have been living off the equity which has been built up through years of active

TABLE 2

TRANSPORTATION NEEDS ESTIMATE
(Adjusted for Inflation)

Activity	Share of Total (Percentage)	Amount (Billions)
Construction	64	\$10.5
Pavement preservation	10	1.7
Maintenance	9	1.5
Operations	15	2.1
Department of Public Safety	4	0.7
Total ten-year need	100	\$16.5

Source: *Final Report and Recommendations: State Transportation Policy Task Force* (March 28, 1980), p. 5.

construction programs. However, each year the drive to work takes a little longer than it did the year before. Potholes, ruts, and bumps in the roads and streets are becoming the rule rather than the exception.

Such statements paint a bleak picture of Arizona's highways, but that picture could become even bleaker if an active adequately funded program of road and street maintenance and construction is not actively pursued in the next decade. Roads and streets, in which pavements are not adequately maintained through pavement preservation programs, may require virtual reconstruction at much higher costs. Construction delays in times of increasing inflation will result in more expensive roads.

In addition, many relatively hidden costs accrue to the average citizen resulting from poor road maintenance and delayed system expansion and improvement. One example of these costs is cited in a study performed by the Tucson-based Citizen Advisory Committee for Transportation Update (CACTU). That analysis provides estimates of increased motorist costs resulting from eight years of arterial street deterioration without remedial action. It suggests that increases in congestion, at present service levels, would cost individual motorists \$250 per year in additional fuel costs alone and that a 25 percent increase in current traffic volume would add 200 hours of travel time per year for individuals.¹⁶

The costs of poor roads are well documented by cost studies performed to evaluate the benefits to be gained from surfacing improvements. A related study, released in February, 1980, by the Road Information Program, estimates that existing badly worn roads cost the average Arizona motorist \$408 per year in wasted fuel, excessive tire wear, and extra vehicle repairs. Not included in this estimate are costs arising from traffic congestion, narrow lanes, antiquated bridges, and accidents.¹⁷ From an even casual assessment of studies such as those cited here, it is

apparent that maintenance of an adequate road system is critical to Arizona's economy and that continued support of system improvement is desirable.

THE PROBLEM

The need for continued improvement of Arizona's highways, roads, and streets is not the problem. The need for continued support is both highly evident and easily justified. The problem is how to generate the revenues necessary to cover the costs of desirable highway programs. In recent years, the gap has been growing between the levels of expenditures required to meet recognized needs and available funding. The causes of this widening gap stem from four basic areas.¹⁸

First, revenues at the federal and state level have generally been tied to user charges based on levels of use. For example, gasoline tax revenues increase only as the consumption of gasoline increases. During the 1970s this occurred at about a 5 percent rate of growth. However, as increasing fuel prices and questions about fuel availability have led to a reduction in automobile use and a shift to more fuel efficient vehicles, revenues from many user charges have either been unchanging or have increased at very slow rates.

Second, at a time when growth in user fund revenues has slowed, highway and street construction costs have been inflating at a substantially faster pace than costs in other sectors of the economy. Indeed, the cost of constructing transportation facilities increased 200 percent during the past decade.¹⁹

Third, much of the nation's highway and street system has now matured and requires increased upkeep to maintain the high levels of service the public has come to expect. For example, the United States Department of Transportation estimated that 4 percent of the interstate system mileage needed major pavement rehabilitation or reconstruction by 1975. By 1978, this estimate had risen to 10 percent of the total system, with 2,000 additional miles of highway reaching design age each year.²⁰ Similar situations are developing on many road and street networks. Additionally, road maintenance costs have been subject to the same inflationary pressures as have highway construction costs.

Finally, local governments have not been immune to pressures for budget constraints or the effects of inflation on construction costs. As a result, local funding has become increasingly inadequate. In many cases local governments have sought to shift more of the burden for highway finance to the state and federal governments.

THE SOLUTION

When available funding lags behind needed expenditures, two solutions are possible: reducing the level of needs or increasing the level of revenues. In practice, a combination of these two possible solutions is generally most desirable and was the approach suggested by the Governor's task force. Based on an evaluation of the state's needs, the task force recommended the ten-year program presented in Table 3. The position taken in developing this program is reflected in the following statement:²¹

TABLE 3
RECOMMENDED TEN-YEAR ARIZONA TRANSPORTATION PROGRAM
ADJUSTED FOR INFLATION
(Billions)

Needs Category	Ten-Year Needs	Investment Levels						Percentage of Needs Met
		Federal Aid	Local Funds	State Financing Levels			Total Investment	
				Net Bond Proceeds	State Revenues	Total		
Construction	\$10.5	\$1.2	\$0.7	\$0.8	\$1.8	\$2.6	\$4.5	43
Pavement preservation	1.7	0.1	—	—	1.2	1.2	1.3	76
Maintenance	1.5	—	—	—	1.2	1.2	1.2	80
Operations	2.1	—	—	—	1.3	1.3	1.3	62
Department of Public Safety	0.7	—	—	—	0.7	0.7	0.7	100
Total	\$16.5	\$1.3	\$0.7	\$0.8	\$6.2	\$7.0	\$9.0	54

Note: All figures are in billions of dollars.

Source: *Final Report and Recommendations: State Transportation Policy Task Force* (Phoenix: March 28, 1980), p. 10.

Although the task force recognizes the legitimacy of the full \$16.5 billion dollars of needs throughout the state, it was concluded that meeting the current backlog of needs and providing for Arizona's explosive economic growth represents tasks that far exceed the capacity of the state's present financing system. Time-consuming planning process, limitations on manpower and materials, legal and political constraints, all combine to serve as an effective barrier to implementation of a transportation program which meets 100 percent of the task force recognized needs.

Fortunately, funding Arizona's transportation requirements need not be viewed as an all or nothing proposition.

The recommendations of the task force include a major restructuring of the state's system for financing transportation programs. These recommendations fall into three areas and are presented in the following paragraphs. They demonstrate one approach to actions that may be required to support Arizona's highway, road, and street systems in the 1980s.²²

1. Index the per gallon motor fuel tax to Arizona personal income, resulting in an immediate increase of the tax to 15 cents per gallon and further increases raising the tax to 43 cents per gallon in the 1989-90 fiscal year. This 1 percent level is approximately the relationship maintained from 1960 through 1970, but which had fallen to 0.57 percent by 1980.

2. Increases in selected motor vehicle related fees such as increases in registration fees from \$8 to \$16 per vehicle, in operator license fees from \$5 to \$10 per license, and in commercial vehicle fees of 50 percent, including registration.

3. Issuance of revenue bonds having ten-year net proceeds of \$800 million. This would require legislative approval and would result in an outstanding cost to retire the bonds, including principal and interest of \$2.3 billion at the end of the decade.

Obviously these are not the only possible solutions to the problem. A number of alternative solutions were analyzed in a report prepared by the three state universities in 1978, including modification of gasoline use tax levels, revised motor vehicle tax schedules, new sales taxes on auto related sales, taxes on private sales of used automobiles, increased operator license and motor

vehicle registration fees, revised for-hire motor carrier operating taxes, increases in property taxes, and bonding. This report was one of the inputs considered during unsuccessful discussion of the highway funding issue in the 1980 session of the state legislature.²³

More recently, the Governor and legislative leaders have been studying a three-point program to meet Arizona's highway needs through: (1) passage of a five-cent hike in the state's gasoline tax, (2) development of a new source of finance, such as a 1 percent increase in the state sales tax, to fund new road or transit projects, and (3) grant local government tax authority, either at the county level or through the creation of transportation authorities, to generate funds for road and transit projects.²⁴ The difficulty lies in reaching a consensus on how much money is really needed and how it should be raised.

However, total lack of action while seeking a solution should not be considered a viable alternative. Increases in funds for highway-related programs are urgently needed. The revenue base for the Arizona Highway User Fund has fallen to the point where it is incapable of maintaining the existing highway system. Revenues over the next decade have been estimated at \$2.6 billion while maintenance of the existing system would require more than \$4 billion.²⁵ It is clear that something must be done, it is not clear what should be done.

CONCLUSION

The purpose of this article has not been to recommend a particular course of action to avoid the state's impending highway system crisis. Rather, its purpose has been to point out the magnitude of the state's highway financing problem and the overwhelming need for action now. If Arizona's economy is to retain its reliance on the highway system, that system must be both maintained in good condition and improved and expanded as necessary to support the state's continued growth. The financing required to support the Arizona system of streets, roads, and highways can be obtained in many acceptable ways. At present, the citizens of Arizona are faced with a controversial problem; without appropriate action, that problem will soon develop into a crisis.

NOTES

¹Based on data accumulated by the Transportation Association of America and published in its *Transportation Facts and Trends* reports prepared quarterly. This information represents passenger-miles and ton-miles generated by passenger and freight movement, respectively. In addition, the same source notes that nearly 40 percent of all tons of freight are moved by truck.

²1977 *Commercial Atlas and Marketing Guide*, Rand McNally Co., and Prepay Station List 92, Station List Publishing Co., as cited in *Arizona Moves by Truck* (Phoenix: Arizona Motor Transport Association), p. 25.

³*Investments in Arizona's Streets, Roads, and Highways: Biennial Statewide Transportation Needs Report — 1980* (Phoenix: Arizona DOT, January, 1980), p. 13.

⁴*Arizona State Highway System Plan — 1978* (Phoenix: Arizona DOT), p. 75.

⁵In many cases, funds collected from one source will be used to support a separate but similar type of highway. For example, federal user charges are collected from users of existing highways but are used principally to support the construction of new highways.

⁶Bonding is often used to generate funds for bridge or tunnel construction, and the revenues collected from tolls charged for facility use are applied directly to service the bond issue.

⁷For a history of this development see Charles A. Taff, *Commercial Motor Transportation*, 6th ed. (Centreville, Md.: Cornell Maritime Press, 1980), Ch. 2 and 3, among others.

⁸*Highways, Safety, Transit: A Summary of the Surface Transportation Assistance Act of 1978* (Washington, D.C.: Highway Users Federation).

⁹Taff, p. 66.

¹⁰*Investments in Arizona's Streets, Roads, and Highways: Biennial Statewide Transportation Needs Report — 1980*, p. 9.

¹¹*Arizona State Highway System Plan — 1978*, p. 117.

¹²*Road Finances and Mileage Data of the Counties and Incorporated Places in Arizona: Fiscal Year Ending June 30, 1979* (Phoenix: Arizona

DOT, June, 1980), pp. 2 and 40.

¹³*Ibid.*, Definitions.

¹⁴*Investments in Arizona's Streets, Roads, and Highways: Biennial Statewide Transportation Needs Report — 1980*, pp. 2 and 5.

¹⁵*Final Report and Recommendation: State Transportation Policy Task Force* (Phoenix: March 28, 1980), pp. 4 and 5, respectively.

¹⁶*Ibid.*, p. 6.

¹⁷From a report of The Road Information Program (TRIP), Washington, D.C., as cited in "Bad Roads Cost Motorists in Wasted Fuel, Auto Wear," *Tempe Daily News* (February 5, 1980), p. 2.

¹⁸Further reading on this topic may be found in *State Highway Finance* (Washington, D.C.: Transportation Research Board, National Academy of Sciences, April, 1980).

¹⁹*Final Report and Recommendations: State Transportation Policy Task Force*, p. 2.

²⁰"Completed Interstate System Seen Impossible by DOT," *Transport Topics* (August 4, 1980), p. 6.

²¹*Final Report and Recommendations: State Transportation Policy Task Force*, pp. 10 and 11.

²²*Loc. cit.*

²³See *Arizona Highways: The Ways and Means for Financing* (Prepared by the state universities for the Arizona Legislature, December 31, 1978).

²⁴"State Grapples with Transportation Costs," *Arizona Republic*, pages A1 and A16. This article also points out the potential impact of the so-called Heusler proposal to roll back property values to 1975 levels. If this proposition passes, the legislature will be reluctant to increase taxes for any purpose, compounding the highway funding problem.

²⁵*Final Report and Recommendations: State Transportation Policy Task Force*, p. 2.

Urban and Intercity Passenger Transportation in Arizona

MARTIN T. FARRIS

The movement of people in Arizona is an important issue, particularly in a state known for long distances between towns and a sizable concentration of population in Phoenix and Tucson. Many policy issues and public decisions involve passenger transportation matters. In approaching these issues, one must understand the dimensions and characteristics of the state's passenger transportation system and must have some set of criteria for evaluation and decision making. Hence, the purposes of this article are to provide that understanding and to suggest some evaluation criteria and policy modifications.

DIMENSIONS OF THE PASSENGER TRANSPORTATION SYSTEM

Essentially passenger transportation has two aspects: the vehicle, and the way. Since Arizona's highways and streets are considered in another article in this series, this article deals with the vehicle.

Dominance of Private Automobiles

The dominance of the private automobile in Arizona transportation is illustrated in Tables 1 and 2. Table 1

In the effort to serve the maximum number of people at the lowest possible cost with the least amount of environmental disruption, many trade-offs are possible in the field of passenger transportation.

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presents both motor vehicles registered and population by counties for 1979. For the state as a whole, there is one passenger car for every 2.11 persons. However, the private pickup truck is also an important factor in Arizona transportation; 252,048 private and non-commercial pickups were registered in 1979; when these are added to passenger cars, the ratio drops to 1.76 persons per vehicle in Arizona.

The growth in passenger cars as compared to population is presented in Table 2, which shows that over the decade the number of total passenger cars registered has grown faster than the population, with 2.22 persons per car in 1969 and 2.09 persons per car in 1979. This is in spite of the somewhat changed growth pattern after the "high point" of 1.98 persons per car just before the first energy crisis in 1973. Obviously, the passenger car dominates as a means of transportation in Arizona.

Motorcycles

Another type of private passenger transportation is the motorcycle. Currently, slightly over 3 percent of the registered vehicles in the state are motorcycles—up from just over 2 percent ten years ago. Of these 73,260 motorcycles, 54.8 percent (40,173) are registered in Maricopa County, and 15.5 percent (11,363) are registered in Pima County. It is conceivable that if the energy crisis deepens, the popularity of the motorcycle and bicycle might increase markedly.

For-Hire Intercity System

A further dimension of the state's passenger transportation system is the for-hire system running between

TABLE 1
PRIVATE PASSENGER CAR AND PICKUP REGISTRATIONS
AND POPULATION BY COUNTY 1979

County	Private Passenger Cars	Private Pickups	Total Cars and Pickups	Population	Persons Per Car	Persons Per Car and Pickup
Apache	9,423	8,132	17,555	49,250	5.23	2.81
Cochise	38,334	10,113	48,447	82,275	2.15	1.70
Coconino	27,942	10,479	38,421	81,550	2.92	2.12
Gila	17,273	7,795	25,068	35,825	2.07	1.43
Graham	8,094	3,609	11,703	21,825	2.70	1.86
Greenlee	4,924	2,416	7,340	11,825	2.40	1.61
Maricopa	722,573	111,963	834,536	1,453,500	2.01	1.74
Mohave	29,374	7,007	36,381	49,050	1.67	1.35
Navajo	18,929	11,018	29,947	73,675	3.89	2.46
Pima	242,389	43,147	285,536	521,325	2.15	1.83
Pinal	38,448	11,950	50,398	91,450	2.34	1.81
Santa Cruz	10,510	2,493	13,003	19,625	1.87	1.51
Yavapai	36,482	11,652	48,134	61,650	1.69	1.28
Yuma	41,482	10,274	51,756	78,125	1.88	1.51
Total	1,246,177*	252,048**	1,498,225	2,630,975	2.11	1.76

*Excludes 13,689 government-owned passenger cars.

**Excludes 6,709 government-owned pickups.

Source: Arizona Department of Transportation, Motor Vehicle Division, Arizona Department of Economic Security, Population Statistics Unit; ratios calculated.

TABLE 2
POPULATION PER PASSENGER CAR IN ARIZONA
1969-1979

Year	Population	Passenger Cars*	Ratio
1969	1,737,000	781,255	2.22
1970	1,775,399	827,579	2.14
1971	1,869,000	891,556	2.10
1972	1,975,000	970,403	2.03
1973	2,075,000	1,047,039	1.98
1974	2,157,000	1,079,927	2.00
1975	2,207,000	1,062,896	2.08
1976	2,270,000	1,072,443	2.12
1977	2,365,000	1,119,347	2.11
1978	2,547,000	1,192,021	2.14
1979	2,631,000	1,259,866	2.09

*Includes government-owned passenger cars.

Source: Valley National Bank, *Arizona Statistical Review*, September, 1979, p. 6 and p. 40; ratios calculated.

cities. The dominant means of for-hire intercity passenger transportation in the state is the intercity bus. The Arizona Department of Transportation (ADOT) reports that 133 cities and towns in Arizona are served by intercity buses through eleven bus lines. In addition, numerous tour companies, airport limousine services, and special worker buses operate in Arizona.

The two dominant intercity bus lines are Greyhound Lines and Continental Trailways. While good comparative data are not available, the following survey of the eleven intercity bus systems gives some idea of the size and extent of bus service.

Greyhound Lines, part of a nationwide system, is the largest intercity bus company in the state, operating 4,353 buses in 1978 (forty-foot buses carrying forty-three passengers). This firm produced 241,958,254 passenger miles¹ and 400,496,459 seat miles in Arizona in 1978,² and produced approximately 27,200 daily vehicle miles in Arizona.

Continental Trailways, also part of a national system, operated 2,000 buses, produced approximately 9,600 daily vehicle miles in Arizona. Trailways serves Phoenix, Tucson, Flagstaff, Kingman, Holbrook, and Williams and other towns along its routes, and maintains terminals in Phoenix, Tucson, and Flagstaff.

Arizona Bus Lines operates twice daily between Phoenix and Ajo and produced 471,711 passenger miles and 115,692,306 seat miles in 1978.³

Nogales-Bisbee Stage Company operates between Tucson and Sierra Vista/Fort Huachuca on a twice-daily schedule⁴ and produced 114,614 passenger miles and 5,527,858 seat miles in 1978.

Citizens Auto Stage operates nine daily round trips between Tucson and Nogales. In 1978 Citizens Auto Stage traveled 1,206 vehicle miles per day and hauled an average of 419 passengers per day, producing 739,825 passenger miles and 20,691,975 seat miles.⁵

Sun Valley Bus Lines, a subsidiary of Greyhound Corporation, provides service from Phoenix to Parker and Lake Havasu City as well as urban service from Mesa to Phoenix via Tempe. Sun Valley operated 2,506,642 vehicle miles in 1979.⁶

Nava-Hopi Tours serves Flagstaff, Williams, and the Grand Canyon.

Mogollon Stage Lines serves Phoenix, Payson, and Winslow via Mesa.

White Mountain Passenger Lines serves Show Low, Whiteriver, Lakeside, Pinetop, McNary, Alpine, St. Johns, Concho, Holbrook, Taylor, Snowflake, Heber, Payson, and Globe.

Las Vegas-Tonopah-Reno Stages provides service from Phoenix to Kingman, Las Vegas, and Reno.

Yuma Bus Company runs three times a day from Yuma to Somerton and San Luis.

Nevertheless, parts of the state have no public transportation. In northeastern Arizona, the Navajo and Hopi Reservations, which occupy one-tenth of the land area of the state, have no public transportation nor does the large Papago Reservation in south central Arizona. Sparse settlements and severity of weather in northeastern Arizona discourage private carriers.

The Arizona Department of Transportation reports that approximately 8 percent of Arizona's 2,200,000 population is without intercity bus service. This includes the towns of Clifton (a county seat), as well as Elfrieda, Winkelman, Bonita, Colorado City, Catalina, Kearny, Mammoth, San Manuel, Bagdad, and Patagonia.

Urban Transportation Systems

A final dimension of the passenger transportation system in the state is the urban transportation systems. Of course, the dominant means of urban transportation, as well as intercity transportation, is the private automobile. Excluding the private automobile, the urban system is composed of urban transit systems, publicly owned demand-responsive systems, taxicabs, specialized transit, and bicycles.

Urban transit systems are characterized by at least one fixed route with a published schedule and regular frequency of service within an urban area. In Arizona six systems meet these criteria and are located in the

metropolitan areas of Phoenix, Tucson, Prescott, Nogales, Douglas, and Sun City. Data on each are contained in Table 3.

Prescott-Whipple Stage, which covers approximately 70 percent of the city of Prescott, operates four buses and carries an average of 130 persons per day. A total of 22,240 passengers were carried in the first six months of 1979. The Prescott-Whipple Stage, privately owned and operated, receives no subsidy and operated at a loss of \$6,315 for the first half of 1979.

Soto Bus Company operates in Nogales and Chula Vista with four buses at a fifty-cent fare, carrying an average of 551 persons per day. The service carried 71,688 total passengers in the first six months of 1979 and receives no subsidy.

Douglas Bus Company provides service within the city of Douglas and to the Mexican border using two buses. They carry approximately sixty passengers per day.

Sun City Bus Line, operated by Del Webb Development Company within Sun City, uses four buses and carried 9,723 passengers during the first six months of 1979 (an average of sixty-seven passengers per day). The system is operated for the convenience of Sun City residents and operated at a \$61,950 deficit for the first half of 1979. No subsidy is involved from public funds.

The Phoenix Transit System operates in metropolitan Phoenix. Data for the year ending January, 1979, are included in Table 3. In 1978, Phoenix Transit carried over 9 million passengers at a cost of ninety-nine cents per passenger. According to the July, 1980, monthly report, Phoenix Transit carried an average of 42,127 passengers per day in the fiscal year ending June, 1980, and is experiencing remarkable growth in ridership. In September, 1979, thirty-seven new advanced design buses were put into the system and new routes were instituted while old routes were extended. In spite of the greatly increased ridership, the system operates at a loss (\$5.7 million in 1978) and in December, 1979, had revenues of \$358,176 but expenses of \$924,988 for a loss of \$566,812. Substantial grant money from the federal government has been utilized by Phoenix Transit in its program of upgrading and expanding the system.

Tucson Transit (SunTran) took over the operation of Old Pueblo Transit in September, 1978, and merged it into the existing SunTran system. In 1978, SunTran carried over 7.8 million passengers which averaged over 29,000 passengers a day at a cost of sixty-six cents per person.

TABLE 3

URBAN TRANSPORTATION IN ARIZONA 1978-1979

	Number of Vehicles	Total Vehicle Miles	Total Passengers	Total Cost	Total Revenue	Deficit	Average Person Trips Per Day	Cost Per Mile	Cost Per Passenger
Phoenix Transit Year Ending 1/6/79	232	5,872,253	9,064,309	\$8,948,015	\$3,247,867	\$5,700,148	34,335	\$1.52	\$.99
Tucson Transit Year Ending 1/6/79	131	4,682,041	7,841,870	5,197,065	N/A	N/A	29,704	1.11	.66
Prescott-Whipple Six months to 6/79	4	18,000	22,290	17,460	11,145	6,315	130	.97	.78
Soto-Nogales Six months to 6/79	4	N/A	71,668	N/A	35,834	N/A	551	N/A	N/A
Douglas Bus Company 1978 data	2	N/A	N/A	N/A	N/A	N/A	60	N/A	N/A
Sun City - Del Webb Six months to 6/79	4	35,880	9,723	65,000	3,050	61,950	67	1.81	6.69
Glendale Dial-a-ride FY 1978-1979 ^a	6	156,000	115,000	239,436	40,347	199,089	442	1.54	2.08
Mesa Dial-a-ride Year ending 12/79	8	N/A	147,706	421,465	68,270	353,195	404	N/A	2.85
Paradise Valley Dial-a-ride July-September, 1979		N/A	10,842	30,575	3,601	26,974	172	N/A	N/A
Phoenix 16 (b) (2) Urban Six months to 12/78 ^b	17	190,971	68,420	45,078	N/A	N/A	526	.24	.66
Tucson 16 (b) (2) Urban Six months to 12/78 ^c	5	50,366	16,195	3,179	N/A	N/A	125	.06	.20
Arizona 16 (b) (2) Rural Six months to 12/78 ^d	7	60,192	17,921	25,971	N/A	N/A	153	.43	1.45

^aData as presented in Arizona Department of Transportation, *Transit Issues in Arizona*, October, 1978, p. 3.

^bCosts reflect only maintenance; driver and administrative cost not reported.

^cCosts reflect gas and oil only; vehicles owned and operated by Jewish Community Center only.

^dIn most cases, cost does not include administration and driver cost.

Source: Information compiled by Mr. Bob Thake, Arizona Department of Transportation, January 4, 1980.

Publicly Owned Demand-Responsive Systems

These systems are usually referred to as "dial-a-ride" and typically have no fixed route. This concept began in the late 1960s as an experiment in Mansfield, Ohio, and Haddonfield, New Jersey. In 1974, the federal government sponsored dial-a-ride in twenty cities and has encouraged it when population density is too light to support a scheduled system. These systems often connect with scheduled metropolitan transit systems and can be an extension of a scheduled system. Three such systems operate in Maricopa County: in Mesa, Glendale, and Paradise Valley. Operating and financial data on these systems are included in Table 3.

Mesa uses taxicabs and operated at a \$353,195 deficit in 1979, carrying 147,706 passengers (an average of 404 a day), using eight cabs. Glendale uses six vans and carried 115,000 passengers in 1979 (an average of 442 per day) at a deficit of \$199,089. The Paradise Valley Dial-a-ride, using taxicabs, is relatively new and in the

period October through December, 1979, carried 9,619 passengers (averaging 153 a day) at a deficit of \$24,049 for the three months. All three of these systems are subsidized by city funds as well as Section 5 Urban Mass Transportation Administration (UMTA).

Specialized Transit

Specialized transit is a transportation service providing access to basic life-sustaining facilities for individuals who cannot travel to such facilities themselves. They are often specially equipped vans moving the elderly, the handicapped, or the disadvantaged. In 1978, 365 specialized transit vehicles purchased with federal funds were in operation in Arizona by various agencies.⁷ Approximately 200 of these were in the Phoenix and Tucson areas and agencies owned from one to fifteen such vehicles. ADOT administers the Urban Mass Transportation 16 (2) program and has provided eighty-three specialized vehicles costing approximately \$1 million in federal and local funds on an 80/20 matching ratio.

Table 3 includes in its last three lines some operating and financial data on a small portion of this fleet.

Taxicabs

Thirty cities in Arizona have taxicab service. Yellow Cab and Checker Cab in Phoenix are the largest companies and average about 60,000 trips per month each with a combined fleet of 220 cabs. Both firms operate wheelchair vans.

Bicycles

For short trips (generally under five miles) the bicycle provides an alternative means of urban transportation. In 1973 the Arizona Highway Department (predecessor to ADOT) published a plan to develop 3,300 miles of bikeways by 1995. Federal funds through the Federal Highway Administration are available for bikeways. However, Arizona's need for highways has not permitted significant diversion of highway funds for separate bikeways so progress has been slow. Recently \$33,200 in federal funds have been designated for construction of bikepaths in Sierra Vista, Safford, and South Tucson.

EVALUATION CRITERIA

Once the dimensions and characteristics of the passenger transportation system are noted, the next step is evaluation. Quantifiable evaluation is not possible — yet certain criteria can be established: availability of service, frequency of service, reliability of service, coordination of alternatives, marketing/public information, adequacy of equipment, and terminal facilities.

Availability of Service

From the passenger point of view, the ideal would be for each passenger to have a vehicle. However, given concern with the environment, congestion, pollution, and economics, this passenger ideal is far from the social ideal. Perhaps from the view of society as a whole, the ideal might be the opposite: every passenger moving in a multiple occupancy vehicle with as little expense, congestion, pollution, and fuel consumption as possible.

Since neither ideal can be achieved, the problem is to find a compromise that serves both ideals as much as possible: to trade off absolute availability (a vehicle for every driver) for availability to the most number of people at the least possible social cost. Where should public transportation be routed? What towns should

have intercity bus service? What areas of the cities should have transit bus service? Which groups in the population need specialized transit? In short, what level of availability of passenger transportation is desirable?

Frequency of Service

Once availability goals have been established, frequency becomes a problem. Intercity bus service between various cities and towns is one matter; the frequency of such service is another matter. Frequency is also important in transit bus service. Depending on how much of the cost is to be covered by the farebox or by ticket revenues, frequency may be a function of demand for the service. Yet it is also true that demand for the service may itself be a function of availability and frequency. To some degree the problem is self-defeating. Demand is too small to generate the desired level of revenues from passengers so availability and frequency are small. But demand is too small because the service is not available and is not frequent enough to compete effectively with the private automobile.

Reliability

Along with availability and frequency comes the matter of reliability. People rapidly lose interest and turn to alternative means, if the bus is continuously late or does not arrive at all.

Coordination of Alternatives

The problem of coordination between alternatives is one of the most difficult operational problems for administrators. Two types of coordination are involved: system coordination and intermodal coordination.

System coordination refers to coordinating schedules so that buses arrive in close proximity to one another at transfer points. By careful coordination, a system can serve much more effectively if transfers can be expedited. To get any sort of coverage at all, transfers are a necessary evil; but they are a problem that is solvable with careful planning. So too with intercity bus operations. System schedules must be carefully coordinated to make the intercity bus an alternative to the private automobile.

Intermodal coordination is more difficult to achieve. System coordination is an internal operational matter but intermodal coordination involves several operations. In Arizona, very little intermodal coordination appears to exist. Dial-a-ride systems need to be carefully coordi-

nated with transit bus operations. AMTRAK schedules need to be carefully coordinated with transit bus operations and vice versa; airline schedules need to be coordinated with transit schedules and intercity bus schedules, etc. Waiting time should be minimized whenever possible.

Marketing and Public Information

Once the problems of availability, frequency, reliability, and coordination are solved, potential users must be informed of available alternatives. A recent survey revealed that 95 percent of the nonriding transit public knew "nothing at all" or "only very little" about bus routes, schedules or fares in metropolitan Phoenix.⁸

Phoenix Transit entered an aggressive campaign to inform the public of its services and in 1978 was allocated funds for a marketing program. An advertising firm and a marketing research firm have been retained in an effort to improve the marketing and public information about the Phoenix Transit system.

The problem appears in various degrees with most passenger transportation. A recent news article⁹ indicated that a fairly broad-based survey found 50 percent of the respondents indicating they would be interested in rail passenger service between Phoenix and Tucson if it were made available to them. This is a particularly interesting finding in view of the fact that rail service already exists between these two cities via AMTRAK.

Adequate Equipment

The problem of equipment is another criteria for evaluation. The public is not going to be attracted to transit buses or intercity buses unless equipment is modern, clean, attractive, and comfortable. While buses probably can never duplicate the attractiveness and comfort of the private automobile, the equipment available must be reasonably adequate in order to present an alternative to the passenger car.

Terminal Facilities

The matter of terminals is the final criteria for evaluation. Adequate, clean, safe, and attractive terminals at convenient locations are necessary for both urban transit and intercity bus operations. Both Phoenix and Tucson have new downtown urban bus terminals, and the major intercity bus companies — Greyhound and Trailways — have relatively modern terminals.

Location is another matter, and again, cost is the controlling factor. In urban transit systems, the concept

of terminals extends beyond merely a downtown location for bus departures and interchange; passenger waiting areas, such as bus stop seats and shelters, park-and-ride lots, kiss-and-ride lots, are also involved. In Phoenix and Tucson these problems are slowly being alleviated and some federal grant moneys have gone into bus shelters and other facilities.

DEGREE OF PUBLIC COMMITMENT

Many policy problems are related to passenger transportation, but most of them depend on how much money is available. Therefore, some understanding of the various federal grant programs and the past action of cities to avail themselves of federal funds is necessary in order to plan intelligently for the future.

Federal Programs

In an attempt to save a rapidly declining urban transit system, Congress passed a series of acts establishing matching grant programs. These began in a small way with the Housing Act of 1961 followed by the Urban Mass Transportation Act of 1964, the first major grant program. In 1973, Congress allowed diversion of highway trust funds for transit, and new major acts to assist mass transit in the United States were passed in 1974 and 1978.

Essentially these programs fund proposals by cities for the following types of projects:

- Capital improvement projects on an 80 percent federal and 20 percent local basis.
- Operating deficits grants on a 50 percent federal and 50 percent local basis.
- Miscellaneous programs for specialized transit for elderly and handicapped, grants to small towns and rural communities through the governor's office, intermodal terminal grants, and Sec. 22 intercity bus grants for smaller towns.

Tucson. Specifically, in Tucson the Model Cities Grants plus Urban Mass Transportation Administration grants allowed for improvements in the Tucson Transit operation and an extended period of free transit for the low-income and elderly on both Tucson Transit and Old Pueblo Transit (which ended in 1976). Other grants in the 1970s allowed considerable improvements to be made in transit services in the metropolitan Tucson area. Table 4 notes these UMTA grants over the years.

In 1979-1980, the City of Tucson utilized \$4.5 million to finance the operating deficit of SunTran and to provide the local share of a federal grant for seventeen

new buses. The city also spent \$1 million to provide demand-responsive transit service to handicapped persons the same year. The 1980-1981 budget calls for \$6.8 million for SunTran and \$1.3 million for handicapped service. Federal operating subsidies currently cover 25 percent of the operating budget of SunTran. Based on this ratio of federal money for operating support, the ten-year projection for SunTran involves \$129 million of federal money.

TABLE 4

FEDERAL GRANTS TO TUCSON FOR URBAN TRANSIT

Capital Grants			
Fiscal Year	UMTA Grant	Local Share	Total
1974-1975	\$2,914,731	\$1,085,539	\$4,000,270
1975-1976	5,213,660	1,505,415	6,517,075
1976-1977	280,436	70,109	350,545
1977-1978	188,064	47,016	235,080
1978-1979**	238,846	59,712	298,558
Operating Assistance Grants			
1974-1975-1976			\$1,646,051
1976-1977			1,357,417
1977-1978			1,624,613
1978-1979			1,901,080
1979-1980*			1,901,080

*Submitted October, 1979

**Approval pending

Source: Data furnished by P. S. Cornelio, Tucson Transit Department, January, 1980

Phoenix. In the case of metropolitan Phoenix, federal funds come through the Maricopa Association of Governments (MAG), in accordance with the 1974 act. Both capital grants and operating deficit grants are involved. Table 5 notes capital expenditures by Phoenix Transit and Glendale Dial-a-ride from 1971 to 1978 which total in excess of \$17 million — \$13 million of which came from federal grants. In 1979, capital projects totaled \$999,000; projected capital improvement budgets for fiscal year 1980-1983 total \$25.3 million with a federal share of \$20.3 million.

Operating support money for the Phoenix Transit System, 1971-1979, is noted in Table 5. Starting with a City of Phoenix grant of \$38,000 in 1971, total support to cover operating deficits has grown to an estimated \$7 million in 1979. The federal share, based on the 50/50 formula in the 1974 act, is now \$3.5 million a year. Both Scottsdale and Tempe make small contributions to the

operating deficit in Phoenix Transit since they are served by some Phoenix Transit routes. Hence the City of Phoenix share of the deficit is less than 50 percent.

By 1985 the estimated operating deficit will exceed \$20 million a year. The degree of federal funding of operating deficit after 1982 will depend on what action Congress takes when the 1978 act runs out.

TABLE 5

FEDERAL GRANTS TO PHOENIX FOR URBAN TRANSIT

Capital Grants			
Month/Year	UMTA Grant	Local Share	Total
Dec., 1972	\$1,902,666	\$ 960,344	\$2,863,010
Nov., 1974	4,523,896	1,080,974	5,404,870
May, 1977	2,638,808	659,702	3,298,510
June, 1977	3,722,724	930,681	4,653,405
June, 1977	820,828	205,207	1,026,035
Feb., 1978	273,280	68,520	341,600
Total	\$13,682,202	\$3,905,228	\$17,587,430

Operating Assistance Grants

Fiscal Year	Phoenix Support	Other Cities' Support	Federal Support	Total
1971	\$ 38,000	—	—	\$ 38,000
1972	181,471	—	—	181,471
1973	410,548	—	—	410,548
1974	741,652	—	—	741,652
1975	834,658	—	\$ 250,000	1,084,658
1976	1,110,534	\$291,339	1,401,873	2,803,746
1977	1,443,708	208,100	1,651,808	3,303,616
1978	2,059,480	150,106	2,209,586	4,419,175
1979*	3,351,300	160,500	3,511,800	7,023,600

*Estimated

Source: Maricopa Association of Governments, *Five-Year Transit Plan, FY 1979-1983*, p. 1-10

Miscellaneous Grant Programs

The Section 16(b)(2) program was originally established in the 1970 amendments to the basic 1964 act and involves capital grants for transportation of the elderly and handicapped on an 80/20 basis. As noted previously, 365 specialized vehicles costing over \$100 million have previously been used in this program. Under the funding in the 1978 act, the Urban Mass Transit Administration has set aside \$171,000 for 1979-1980 for added projects in this category.

Section 18 is an innovation under the 1978 act specifically aimed at smaller towns and rural passenger transportation. In 1979, \$75 million was available for this program; Congress allocated over \$100 million per year for 1980-1982 for this program. Grants are made to and administered by the states on a formula based on the relative portion of the state's rural and small city population as compared to national rural and small city population. Arizona was allocated \$546,975 for 1979 under Section 18 to be allocated by the Governor's office.

Section 21 concerns capital grants for intercity and intermodal terminals; \$40 million per year through 1982 has been appropriated for this program nationally. This portion of the act contemplates *intermodal* terminals (facilities utilized jointly by both intercity and urban transit buses) and provides for 80 percent federal financing for lease or construction of such facilities. No grants have been made in Arizona. Quite obviously, these federal grants programs have been, and will continue to be, important to both Phoenix and Tucson as well as to other Arizona cities.

Policy Problems

Federal grants are currently available only when matched by local funds — 20 percent for capital acquisition (80 percent federal), and 50 percent for operating deficits (50 percent federal) in urban transit and for intercity bus operating agreements and bus terminal upgrading. State highway money to match federal money (generally on a 75 percent federal and 25 percent state basis) is necessary to build bike paths.

The projected needs for both Phoenix Transit and SunTran and the funds necessary to meet these goals in future years have been noted. Whether such local and state commitment of funds will be available in future years cannot be predicted. Likewise, it is difficult to predict how Congress will react when the five-year 1978 act runs out and the \$13.7 billion in public transportation aid is exhausted in 1983. However, it is possible that a continuing and probably increasing public commitment will be necessary to sustain both urban transit and intercity bus transportation in the future.

To achieve this, realistic goal-setting is necessary.

Funds should be used where they can produce the greatest results. Trip purpose surveys have repeatedly shown that approximately one-third of all trips in the urban environment are work related, about one-third are for personal business and about one-third are pleasure related. It is probably unrealistic to expect public transportation to substitute for the personal car in most business and pleasure-related trips since the car is more convenient. But as energy costs increase and as good public transportation develops, some substitution in these areas can be expected. However, on work-related trips, real hope exists that public transportation can make a significant contribution. Policy decisions aimed at making public transportation more attractive to the journey-to-work driver would seem to be most productive.

Increasing Efficiency

The key to more efficient use of existing systems is the load factor. In Maricopa County a recent survey indicates that an automobile carries an average of 1.29 persons per trip. If this load factor could be increased even slightly, the existing road and street system could be used more efficiently.

Policies encouraging car pooling and van pooling could make better use of the present system. Financial incentives could be instituted that would accelerate policies to encourage car and van pooling: lower taxes and fees for vehicles used in pools; tax credits to firms providing preferred parking for such vehicles.

CONCLUSION

Passenger transportation is an important part of the Arizona economy and it is an area where decisions and choices have to be made. Understanding the dimensions and characteristics of the passenger transportation system provides a base for that decision making. Evaluation of the performance of the system and consideration of the past levels of support are also important in decision-making about passenger transportation. Many trade-offs are possible and many potential policy modifications may be desirable in the attempt to have the passenger transportation system serve the maximum number of people at the lowest possible cost and with the least possible environmental disruption.

¹Definitions: *passenger mile* — one passenger carried one mile; *seat mile* — one bus seat (empty or full) carried one mile; *daily vehicle mile* — total miles traveled by one vehicle per day.

²According to correspondence from Arizona Department of Transportation (ADOT).

³Ibid.

⁴Ibid.

⁵Ibid.

⁶Information provided by Director of Operations, Sun Valley Bus Lines.

⁷According to a survey by ADOT.

⁸Survey conducted by the City of Phoenix, 1978.

⁹*Phoenix Gazette*, January 10, 1980.

Arizona's Railroad System

T.F. GRIFFITH

The development of modern transportation, as a system, in Arizona began slightly over 100 years ago with the arrival of the Southern Pacific railroad in Yuma in 1877. Since that time the railroad industry's contribution to the state has been so great as to be almost immeasurable. Today, Arizona's railroads provide vital rail service to Arizona agriculture, mining, and timber industries and also serve as interstate rail bridges linking California with points east.

ARIZONA'S RAIL SYSTEM

It has been estimated that as many as 88 railroads have played a part in Arizona's history.¹ There have been 35 separate and distinct railroads developed under different ownerships, 18 industrial railroads, 20 railroads built as corporate subsidiaries by larger roads, and five street railroads. Today, only eight remain. Two are major interstate common carriers, four are intrastate

lines, and two are privately owned industrial railroads which are operated to meet the specific needs of their owner, the Salt River Project. Arizona's railroads operate on slightly more than 2,000 miles of line within the state and serve over 1,000 firms ranging in size from large mining interests to small agricultural feed processors.²

Arizona's rail system consists of two Class I railroads (railroads having annual operating revenues of over \$50,000,000) — the Atchison, Topeka, and Santa Fe Railway Company and the Southern Pacific Transportation Company. These two lines account for 1,829 of Arizona's approximately 2,024 miles of track, exclusive of sidings and yard track. There are four Class III railroads in Arizona (railroads having annual operating revenues less than \$10,000,000) — the Apache Railway Company; the Magma Arizona Railroad Company; the San Manuel Arizona Railroad Company; and the Tucson, Cornelia and Gila Bend Railroad Company. The two industrial railroads owned and operated by the Salt River Project are the Black Mesa and Lake Powell Railroad and the Coronado Generating Spur.

The Arizona segment of the Southern Pacific Railroad provides interstate service through the southern part of the state; the Santa Fe Railroad serves a similar function in the north. Both maintain and operate numerous branch lines within Arizona that are critical to local industry and economies. The Arizona Corporation Commission has catalogued 1,074 industries (Table 1) which depend upon rail transportation to move their materials.

Although other modes of transportation have overshadowed the railroads, they remain an important component of Arizona's transportation dimension. This article views the overall rail system and discusses both rail freight and rail passenger transportation as well as current issues in Arizona rail transportation.

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Table 1 also indicates that the Southern Pacific Railroad owns 50 percent of Arizona's common carrier rail track, which accounts for 68 percent of the carloads shipped from and received by Arizona interests. The Santa Fe Railroad owns 42 percent of the common carrier rail track and accounts for 24 percent of the

carloadings. The intrastate carriers own 8 percent of the common carrier rail track and account for 8 percent of the carloadings. Southern Pacific's dominance is principally the result of traffic generated by the large mining concerns it serves. In fact, as Table 2 indicates, the Southern Pacific Railroad carries considerably more metallic ore than any other single commodity.

TABLE 1

ACTIVE RAIL USERS AND CARLOADS SHIPPED AND RECEIVED

Railroads	Number of Active Rail Users	Miles of Track	Carloads Shipped and Received
Santa Fe Railroad			
Main line	362	698	96,795
Branch line	8	130	2,242
Total	370	828	99,037
Southern Pacific Railroad			
Main line	548	596	89,743
Branch line	140	425	189,951
Total	688	1,021	279,694
Other common carrier railroads	16	175	34,885
Total	1,074	2,024	413,616

Source: *Arizona State Rail Plan - 1979 Update*, Arizona Department of Transportation, July, 1979.

The Atchison, Topeka, and Santa Fe

The Atchison, Topeka and Santa Fe Railway⁴ is a major subsidiary of Santa Fe Transportation Industries, Inc., an integrated, multimodal transportation holding company with corporate headquarters in Chicago, Illinois. Originally the Santa Fe reached Arizona using Southern Pacific tracks which it joined at Deming, New Mexico, and transited through to Benson, Arizona. At Benson it joined a subsidiary, the New Mexico and Arizona Railroad, which had been built southwesterly to Fairbanks and Nogales to meet an affiliated line building up from the seaport of Guaymas, Mexico. The last connection was made at Nogales in October, 1882. Actually this was a long and circuitous route to reach California.⁴

A more direct route became available to the Santa Fe through their investment in the St. Louis and San Francisco Railway, which had acquired the bankrupt Atlantic and Pacific Railroad and its charter and land grants to build from St. Louis into California along the

TABLE 2

CARLOADS SHIPPED AND RECEIVED BY COMMODITY

Product	Santa Fe Railroad		Southern Pacific Railroad		Other Common Carrier Railroads		Total	
	Shipped	Received	Shipped	Received	Shipped	Received	Shipped	Received
Farm products	1,280	5,792	5,018	4,894	0	124	6,298	10,810
Metallic ores	3,294	5	85,788	80,773	40	2,971	89,122	83,749
Nonmetallic ores	607	550	2,794	2,400	669	84	4,070	2,834
Food and kindred	2,789	5,964	1,845	11,045	0	3	4,634	17,012
Lumber and wood	4,807	15,416	402	7,912	1,535	439	6,744	23,767
Chemicals and allied	129	1,130	3,058	8,049	4,238	486	7,425	9,665
Petroleum	1,024	6,797	34	7,185	85	503	1,143	14,485
Primary metal products	239	704	10,865	3,610	3,562	760	14,666	5,074
Waste and scrap	452	3,368	2,277	6,984	55	2,676	2,764	13,028
Coal	0	1,200	0	4,110	0	3,530	0	8,840
Pulp, paper and allied	14,460	2,955	1,116	4,162	4,799	7,675	20,375	14,792
Stone, clay and glass	4,530	7,113	0	5,395	10	318	4,540	12,826
All other	1,693	12,935	1,697	18,281	111	332	3,501	31,548
Total	35,304	63,729	114,894	164,800	15,084	19,901	165,282	248,430

Source: *Arizona State Rail Plan - 1979 Update*, Arizona Department of Transportation, July, 1979.

thirty-fifth parallel. The project failed a few hundred miles out of St. Louis. However, with Santa Fe's investment and existing operations in New Mexico, work was begun near Albuquerque in 1880 and completed across Arizona to Needles in 1883. At Needles the railroad connected with a branch of the Southern Pacific for the remainder of the route across California.

Today, Santa Fe rail operations extend from Chicago through the midwestern and southwestern states to California. The company owns a total of 12,957 miles of main line track with 828 miles of track located in Arizona. The Santa Fe currently serves 370 Arizona rail users shipping farm products, coal, timber, paper, and other wood products.

The Southern Pacific Transportation Company

The Southern Pacific Transportation Company is a subsidiary of the Southern Pacific Company, an integrated multimodal holding company, which has its corporation headquarters in San Francisco, California.

The Southern Pacific railroad initially entered Arizona as an attempt by the owners of the Central Pacific Railroad to preempt competition from the east by blocking, with their own lines, all of the known transcontinental entrances to their territory³. During the late 1860s the owners of the Central Pacific had control of 85 percent of California railroads; however, this monopoly was being threatened by the federal government, which was making generous grants to rival western roads in order to stimulate competition. Charters were issued to the Texas Pacific along the thirty-second parallel, the Atlantic Pacific along the thirty-fifth parallel and the Southern Pacific. The owners of the Central Pacific acquired the California charter of the southern Pacific in 1868 and began building large operations in the vicinity of Los Angeles. This work was later extended through the San Joaquin Valley toward Yuma. The first scheduled operations of Southern Pacific's Arizona Division began in January, 1879, with a daily round trip operating from Yuma to Gila City and Ajo, a total distance of 30 miles. The line reached Tucson on March 17, 1880, and was completed across Arizona to El Paso in 1881.

Southern Pacific rail operations now extend over twelve states from Oregon through the Southwest to East St. Louis. The company operates on more than 12,000 miles of track with approximately 1,021 miles of main and branch line track in the southern half of Arizona. Southern Pacific serves almost 700 Arizona customers and moves mineral and agricultural products.

Apache Railway

The Apache Railway Company, a wholly owned subsidiary of Southwest Forest Industries, is headquartered near Snowflake, Arizona and operates over 74 miles of track between McNary and Holbrook. The railroad has five users; however, 90 percent of the traffic moved is generated by Southwest Forest Industries. The principal products moved are lumber, wood and paper products, petroleum products, coal, grain, and chemicals.

Magma Arizona Railroad

The Magma Railroad operates over 28 miles of track between Magma and Superior and is a wholly owned subsidiary of the Magma Copper Company. The railroad, which began operations in 1915, serves three users; however, most of the freight moved on the line consists of primary metal products and metallic ores which originate near Superior and are transported to San Manuel for smelting.

San Manuel Arizona Railroad

The San Manuel Railroad, which extends from Hayden to San Manuel, is also a wholly owned subsidiary of the Magma Copper Company. The railroad began operations in 1953 and operates over 29.4 miles of main line serving only the San Manuel Copper Company. The freight consists of chemical products, metallic ores, primary metal products, nonmetallic minerals and lumber products.

Tucson, Cornelia, and Gila Bend Railroad

The Tucson, Cornelia and Gila Bend Railroad is a wholly owned subsidiary of the Phelps Dodge Corporation and operates over 44.34 miles of track between Gila Bend and Ajo. The railroad has three users, and the products consist of petroleum products, primary metal products and metallic ores.

Black Mesa and Lake Powell Railroad

This railroad is owned and operated by the Salt River Project and runs from a strip mine near Kayenta at Black Mesa to the Navajo Generating station near Page. The line does not connect to any common carrier railroad, and its cargo consists only of coal to fire the generating plant's steam boilers.

Coronado Generating Spur

This railroad is also privately owned by the Salt River Project and is used exclusively to haul coal from its connection with the Santa Fe, at Holbrook, to the Coronado power generating station located near St. Johns. The line is 43 miles long and presently serves three unit-trains per day consisting of 80 to 100 cars. It is planned to extend the existing line to Springerville where it will serve Tucson Electric's plants.

RAIL FREIGHT TRANSPORTATION

Railroads are generally recognized as specialized line-haul carriers of bulk products between major industrial sidings and terminal yards.⁶ This description fits freight operations in Arizona quite well. To a large extent, Arizona serves as a bridge for interstate traffic which neither originates nor terminates in the state. It is estimated that as much as 74 percent of rail traffic in Arizona is in fact bridge traffic.⁷ The remaining 24 percent of rail traffic, approximately 10 million revenue tons, reflects the needs of the industries and populations served by the individual railroads.

The Southern Pacific, the state's largest railroad, is also the state's largest originator of revenue tons. Approximately 37 percent of the tonnage it carries in Arizona is originated in Arizona. In contrast, only 10 percent of the total revenue tonnage carried by Santa Fe in Arizona is originated in the state. This occurs because the Southern Pacific's route through Arizona is through the southern part of the state which has an extensive copper industry. More than 85 percent of the Southern Pacific's Arizona-origin tonnage is associated with the copper mining industry, and most of its branch lines also serve copper mining activities. Farm products account for approximately 9 percent of the Southern Pacific's originations which are generated in Yuma, Maricopa, and Pima Counties, and consist principally of citrus, feed grains and cotton.

Approximately 49 percent of the revenue tonnage carried in Arizona by the Southern Pacific terminates in Arizona. Seventy percent of the terminating tonnage is comprised of freight associated with the copper industry and farming. Approximately 58 percent of the terminating tonnage is metallic ore, the bulk of which terminates at Ajo, Douglas, San Manuel, Clifton and Globe. The remaining terminating freight is related to population centers and consists of inbound food and consumer products which terminate at Tucson and Phoenix, and coal products for consumer use and energy generation.

The Santa Fe, which serves the northern part of Arizona, does not have a comparably large industrial base to support a high level of cargo originations and terminations. As mentioned previously, only 10 percent of the Santa Fe's Arizona tonnage originates within the state. Lumber and wood constitute approximately 24 percent of the originations followed by pulp and paper, and farm products at 13 percent each.

The Santa Fe's Arizona terminations are also substantially less than the Southern Pacific's with only 17 percent of its Arizona operations terminating within the state. The principal commodities terminated are petroleum and coal (25 percent of the terminations), lumber and wood (22 percent of the terminations), and stone and clay (10 percent of terminations).

RAIL PASSENGER TRANSPORTATION

With the expansion of highway and air transport systems, rail passenger service has become less important. By 1970, the railroad share of the United States intercity passenger service was only 7.2 percent of all for-hire intercity passenger transportation. Rail passenger volume of all intercity travel, including automobile trips, was less than 1 percent of the total 1970 United States intercity passenger movements.

There are numerous reasons for the low demand for rail passenger transport, mainly the faster speed of air transportation and the greater flexibility of the automobile. Because of the continued low demand for rail passenger service, management was reluctant to commit capital investment to passenger operations, resulting in the deterioration of passenger service. The Interstate Commerce Commission reacted to this situation by permitting railroads to discontinue passenger service. During the period between 1958 and 1970, nearly one-third of the intercity passenger train service was discontinued. While this action alleviated the problem of deficits in passenger operations, it did not stop all deficits; between 1963 and 1970 deficits exceeded \$400 million annually.

In response to continuing deficits and particularly the 1970 bankruptcy of the Penn Central Railroad, Congress enacted the Rail Passenger Service Act of 1970, which created AMTRAK, the National Railroad Passenger Corporation.

Carriers previously engaged in passenger service were given the option of becoming associated with AMTRAK or continuing independently. Carriers that chose not to become associated with AMTRAK were not permitted to discontinue their services for a period of at least five

years. Three railroads — the Denver & Rio Grande Western, Rock Island, and Southern Railway — did not become affiliated with AMTRAK.

AMTRAK currently serves Arizona utilizing the northern Santa Fe route (Southwest Limited) and the southern, Southern Pacific route (Sunset Limited). The Southwest Limited provides daily service each way from Los Angeles to Chicago, and the Sunset Limited provides service in each direction three times weekly between Los Angeles and New Orleans. Intercity rail passenger service in Arizona is available between Phoenix and Tucson although it consists only of one morning eastbound train on Mondays, Wednesdays, and Saturdays, and one evening westbound train on Tuesdays, Thursdays and Saturdays. However, as a result of the AMTRAK Reorganization Act of 1979, AMTRAK is enabled to operate jointly funded additional service in conjunction with, and under the sponsorship of, state, regional, or local agencies. The act stipulates that the sponsor must pay 20 percent of the solely related costs of the service in the first year of operation, 35 percent of such costs in the second year of operation, and 50 percent of such costs in each year of operation thereafter. Due to the availability of federal funds, combined with increasing interest in rail passenger service within the state, the Arizona Department of Transportation (ADOT) made a commitment in their 1979 Overall Work Plan to study the feasibility of establishing state assisted rail passenger service between Phoenix and Tucson.

ADOT's Phoenix/Tucson rail passenger study, published in March, 1980, listed the following findings:⁸

- The Southern Pacific track linking Phoenix and Tucson is in excellent condition permitting passenger train speeds of approximately 70 mph.
- A reasonable estimate of the number of passengers that could be attracted by the proposed service is 240 a day.
- The most reasonable estimate of subsidy required to sustain the service for a year is \$2,409,000.
- The amount of subsidy to be borne by the sponsor under the most reasonable estimate would be: \$482,000 the first year; \$843,000 in the second; and \$1,204,500 in the third year.
- Existing highway facilities have and will continue to have sufficient capacity to accommodate traffic traveling between Phoenix and Tucson.
- Buses and airlines traveling between Phoenix and Tucson currently have the capacity to carry significant numbers of additional passengers.
- In terms of energy efficiency, rail passenger service does not appear to offer any advantage over bus.

Also, in 1980, ADOT studied the feasibility of establishing permanent commuter rail service in the Phoenix-Mesa corridor.⁹ The study was the result of emergency commuter rail service between Phoenix and Mesa during the mid-February, 1980, bridge closings. The study found that express bus service appears to be more desirable in the Phoenix-Mesa corridor than rail service. However, ADOT recommended that consideration of rail as a means of public transportation should not be discarded and advised against actions which might preclude the option for implementing rail service in the future.

Whether intercity rail transportation of passengers will ever become a viable operation, remains to be seen. Arizona railroads have consistently maintained that passenger trains are not economically feasible and have never constituted a significant portion of revenues. Indeed, in 1979 AMTRAK had a record year in revenues earned and ridership but could only attain a revenue-to-expense ratio of 41.5 percent.¹⁰ It must be pointed out, however, that when fully utilized, rail operations tend to be relatively more energy efficient than air or automobile alternatives. Given the prevailing energy problems, rail passenger service may well become a valuable resource.

CURRENT ISSUES IN ARIZONA RAIL TRANSPORTATION

While many issues are involved in the continued operation and viability of the nation's railroads, current efforts to reform regulation of the railroad industry are of interest to Arizona. These efforts, even though in early stages of development, are already changing Arizona shipping patterns.

Recent action in the area of regulatory reform has been dramatic. Commercial air transportation regulation was significantly reduced through the Airline Deregulation Act of 1978. Regulation of interstate motor carrier operations has also been significantly reduced through the recent enactment of the Motor Carrier Act of 1980. Regulatory reform of the railroad industry has been provided for by the recent passage of the Rail Act of 1980.

Regulatory reform of the railroad industry has been directed primarily toward shoring up the railroad industry, in which many carriers are having severe financial problems, by allowing them to become competitive with the other modes of transportation. This is in contrast with the reform of airline and motor carrier regulation which was directed toward promoting greater competition within each mode. The legislation gives

railroads considerable freedom to raise freight rates free of Interstate Commerce Commission control, to sign rate-and-service contracts with shippers, to raise rates unilaterally on one railroad's portion of joint-line shipments and to abandon unwanted branch lines more freely.

The legislation is so recent that there is little information available on which to judge the ultimate impact on the rail industry. It is clear, however, that the railroads still will not have as much freedom from regulation as is enjoyed by their principal competitors, the motor and water carriers. Evidence indicates, however, that the legislation will be beneficial.

During the period of congressional deliberation of railroad regulatory reform, the Interstate Commerce Commission proceeded administratively on the same course. Particularly important to Arizona shippers is the commission's action on May 28, 1979, exempting a number of agricultural commodities from regulation.

As recently as 1950, railroads were dominant in the movement of fresh fruits and vegetables throughout the nation. However, the advent of the Interstate Highway System, the staggering rise in the number of independent truckers, low cost fuel, and the exemption of these commodities from motor carrier regulation all resulted in the decline of railroads as a major factor in the movement of perishables. Rail participation in the movement of perishables dropped to less than 10 percent of the market.¹¹ The commission's exemption of these commodities from regulation was an effort to stop the downward trend.

The result of the exemption of perishables has been dramatic. During the first year of exemption, the Southern Pacific experienced a 43 percent increase in perishable traffic.¹² During the first five months of 1980, their lettuce loadings increased 80 percent, and citrus loadings from Southern California and Arizona were twice that experienced during the same period of 1979. Arizona potato shipments tripled the previous year's volume for the growing season. To meet the demand for rail transportation of California and Arizona produce to Eastern and Midwestern markets, the Southern Pacific has added two special trains. The "Salad Bowl Express" which began operating as four cars in 1979 was expanded to three complete trains daily during the harvest peak. The "Golden West Express" was added to this service in May, 1980.

The impact of perishable traffic exemption has literally reached across the nation. For example, Conrail traffic in these commodities throughout the northeastern region of the United States was up 23 percent in carloadings and 33 percent in tons carried during the

first year of exemption.¹³ During the first five months of 1980, carloadings and tons carried were up 67 percent and 79 percent respectively over the same period of 1979.

Proponents of regulatory reform for the rail industry use results such as these to indicate the value of allowing price and service to be dictated by the marketplace, customers, and competition, rather than an independent commission.

CONCLUSION

Railroads began the transportation revolution in Arizona forming the state's first modern transportation system. Today, other modes of transportation have forced railroads from their once preeminent position; however, they remain as an important and necessary component of Arizona's transportation dimension. Their inherent advantage as a highly integrated transportation system for hauling carloads of goods in trains over long distances is particularly suitable to many of Arizona's products and their markets. This, coupled with their characteristic of being a relatively low energy-consuming carrier, enhances their value to the state's economy.

The rail mode is the most energy efficient form of transport for many goods, especially long-distance movement of bulk goods. The basic principle underlying railroads is application of the flanged steel wheel to the steel track resulting in relatively little frictional resistance. As a consequence, it requires less horsepower to move a net ton of cargo by rail (2.65 h.p.) than by pneumatic tire on a highway (7.00 h.p.) or a modern heavier-than-air craft (500 h.p.).¹⁴ This inherent fuel efficiency of the railroad suggests that in the future, railroads will play an increasingly important role in the state's economy. As energy efficiency becomes increasingly important, both in terms of national policy and economics, the railroads should benefit.

Specifically, in the future, railroads should benefit from a trend toward expansion of their piggyback services in which the truck trailer or the truck container separated from its wheels is carried on flatcars. The practice started in the early nineteenth century with railroads hauling circus and farm wagons, but it did not expand rapidly until the mid-1950s. Today, virtually all railroads now offer some degree of piggyback service. The advantage of this form of transportation is that it combines the short-haul advantages of the motor carrier with the long-haul economies of the railroads.

The future of rail passenger service is less optimistic. Some forecasts of rail passenger traffic indicate service

could quadruple. However, much of the increase is anticipated in high density corridors. While some expansion of commuter service has been forecast, it is expected in areas that have a considerably higher density of users than Arizona.

The impact of deregulation on the railroad industry is not yet obvious since the legislation has not yet been implemented. However, the results of regulatory reform

undertaken administratively by the Interstate Commerce Commission indicate that Arizona shippers and consumers may well benefit from reduced regulation.

A view to the future, therefore, presents an outlook that is fairly good. There is hope for a reversal of the long-term decline in both freight and passenger traffic and the possibility of a system that is more responsive to customer needs and competitive pressures.

¹David F. Myrick, *Pioneer Arizona Railroads* (Golden, Colorado: Colorado Railroad Museum, 1968) p. 4.

²*Arizona State Rail Plan - 1979 Update*, Arizona Department of Transportation, p. 15.

³Much of the statistical information regarding the Atchison, Topeka and Santa Fe Railway Company and the other individual carriers discussed in this section was obtained from the *1978 Arizona State Rail Plan*, Arizona Department of Transportation.

⁴Myrick, p. 12.

⁵Matthew Josephson, *The Robber Barons* (New York: Harcourt Brace Jovanovich, 1934) p. 219.

⁶John L. Hazard, *Transportation: Management Economics Policy*, (Cambridge, Maryland: Cornell Maritime Press, 1977) pp. 127-140.

⁷*1978 Arizona State Rail Plan*, pp. VI-22 - VI-55.

⁸*Phoenix-Tucson Rail Passenger Study*, Arizona Department of Transportation, p. x.

⁹*Phoenix-Mesa Commuter Rail Study*, Arizona Department of Transportation.

¹⁰*Information Letter*, Association of American Railroads, 2275, July 18, 1978.

¹¹"Hitting the Comeback Trail," *Railway Age*, April 28, 1980, p. 22.

¹²*Information Letter*, Association of American Railroads, 2298, June 25, 1980.

¹³*Ibid.*, 2299, June 25, 1980.

¹⁴Hazard, p. 128.

Scheduled Air Passenger Transportation in Arizona

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The United States airline industry earned record profits in 1978 — \$1.2 billion¹ — and may well experience record losses only two years later in 1980: During the first six months of this year, losses for the airline industry were \$274 million.² The airline industry is in a period of transition that is both dramatic and traumatic. This evolution is primarily due to rapidly escalating fuel costs and economic deregulation. The consequences of the current recession have greatly complicated the inevitable problems in such a transition.

In reality, of course, the airline industry has been changing over a long period of time, but the developments of the past few years have greatly accelerated the pace of change and have had substantial impact on scheduled air service in Arizona. A brief look at the development of air service in Arizona is helpful in understanding the current developments.

The airline industry is currently experiencing dramatic fluctuations due primarily to escalating fuel costs and deregulation. This article discusses the emergence of local service carriers and commuter airlines and the effects of the Airline Deregulation Act of 1978.

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Early air service in Arizona was essentially a part of transcontinental routes traversing the state. A predecessor of Trans World Airlines (TWA) initiated service at Winslow, primarily as a fuel stop, and later offered service to the Grand Canyon via a stop at Valle. A forerunner of American Airlines also offered service to Douglas, Tucson, and Phoenix on a transcontinental route well before World War II.

The development of tourism and general economic growth led to the development of Phoenix and Tucson as profitable markets willingly served by airlines in the post-World War II period. This was true even at a time when such operations were unsubsidized. However, service to other Arizona cities must be explained largely in terms of federal air transportation policies, particularly as they involve subsidy practices.

EMERGENCE OF LOCAL SERVICE CARRIERS

The move to larger and more technologically advanced aircraft made it unnecessary for airlines (like American and TWA) to stop at points such as Douglas and Winslow for refueling. It also became generally impractical to serve airports at these cities and at Valle (Grand Canyon). It was the anticipation of developments such as these that led the Civil Aeronautics Board (CAB) in 1944 to establish, on an experimental basis, a new class of carrier — local service or "feeder" airlines. The CAB reasoned that existing trunk lines would concentrate on

long haul and heavy density routes where profits were more likely. The board then concluded that a category of carrier that only served the smaller cities would be more likely to provide superior service to these communities. Although the CAB chose to treat the program as an experiment and granted only temporary, renewable certificates to the local service carriers, Congress granted permanent certificates to such carriers in 1955.

The CAB imposed various restrictions on the local service airlines to minimize their competition with the trunk lines, and federal subsidies were made available to permit service between the smaller communities and to link these communities to the larger cities.³

Congress and the CAB generally have not relied heavily on internal subsidization in air transportation. Internal subsidization requires a carrier to use "excess" profits from successful routes or markets to subsidize unprofitable service to less popular points, a practice that has been common in rail and highway service. One major limitation of such a policy in air transportation was the absence of significant "excess" profits on virtually any routes during the developmental period. An illustration of exceptions to this general policy was the requirement that American Airlines continue to be responsible for service to Douglas for years after American ceased to receive direct subsidies.

Two local service airlines served Arizona in the years just following World War II — Bonanza Airlines, now part of Republic Airlines (formerly Hughes Airwest), and Frontier Airlines. No other local carriers, except Hughes Airwest, served Arizona until recent deregulation allowed freer entry into markets.

The same circumstances that induced the trunk lines to concentrate on long haul and heavy density routes also influenced the local service airlines. That situation along with the desire of Congress and the CAB to limit subsidies, began a process that altered the character of the local service airlines. The CAB began to require certain levels of traffic or special extenuating circumstances if a route were to continue receiving subsidy. Additionally, the CAB permitted reduction or elimination of service on routes to many communities that were unprofitable in order to reduce carrier losses (and ultimately subsidies). In other cases, the local service carriers were given added route authority which often made their services more competitive with trunk lines. The adoption of larger aircraft, especially jet aircraft, contributed greatly to this trend.

By the late 1970s these carriers could better be described as regional trunk lines rather than local service airlines. This trend resulted in the discontinuance of

service by this class of carrier to such communities as Safford, Prescott, Kingman, Winslow, and Page. Although each of those towns was being subsidized by the CAB, the amount of the subsidy (almost a half-million dollars per year, per community), plus revenue generated at each community, was not sufficient to permit profitable operation, particularly of jet aircraft.

COMMUTER AIRLINES

Another type of carrier — the commuter airline — was evolving to fulfill the role of serving the smaller cities that were being substantially abandoned by the local service airlines. At present, commuter airlines are defined as scheduled airlines carrying passengers or mail and operating aircraft with a maximum capacity of less than fifty-six passengers. The new standard was set by Congress as part of the 1978 deregulation. Prior to that time the size of aircraft, which were exempt from federal economic regulation, was set by the CAB. The recent previous standard had been thirty-passenger aircraft, and the size was even smaller at an earlier date.

Prior to the passage of the Airline Deregulation Act of 1978, the Arizona Corporation Commission was responsible for the regulation of intrastate carriers. All such carriers (e.g., the now defunct Apache Airlines) were subject to regulation regardless of the size of aircraft operated. All carriers would have been exempt if operating in interstate service, however, because all aircraft operating in Arizona by these carriers were under the size exempted by the CAB (in contrast, for example, with PSA in California). The Corporation Commission issued certificates of convenience and necessity and regulated fares. The commission was normally constrained to authorizing a single carrier between market pairs by the state's "regulated monopoly" law. However, after the federal government passed the deregulation legislation in 1978, it was ultimately decided that this law preempted state activity in connection with such regulation. Accordingly, the commission ordered:

that no carrier, in order to engage in transportation by air, need to seek or obtain a certificate of public convenience and necessity or contract carrier's permit or any other authority from the commission after the effective date of this order. (October 17, 1979)

The metamorphosis of the local service airlines made it evident that if smaller cities were to receive air service it would generally involve service by some other type of carrier. After considering the possibility of flow-through subsidies for commuter airlines, the CAB elected to provide direct subsidies to newly certified carriers such as Air New England and Air Midwest. Although Air

New England was classified as a local service airline for a brief period of time, these carriers were generally not treated as local service carriers — an important point in view of the method used for determining subsidy levels for local service carriers. In 1978 the CAB expanded the new subsidy program by agreeing to provide regional feeder-service certificates to Cochise Airlines and Sky West Aviation and to subsidize service by these carriers to certain points in Arizona and neighboring states.

The policy of the CAB in this decision in the Arizona service investigation was partly negated by subsequent deregulation. However, certain points reflected in the decision are worth reviewing. Twelve Arizona cities were involved in the investigation and the CAB separated these into three categories. Yuma, Grand Canyon, and Flagstaff (and El Centro, California) were viewed by the Board as being capable of supporting air service without subsidy; Cochise Airlines, although certified to serve them, was not to be eligible for subsidy on service to these points.

Kingman, Prescott, Page, and Winslow (and Blythe, California) previously had been served with large aircraft by Frontier Airlines or Hughes Airwest, but these airlines had suspended these operations because of financial losses. The CAB authorized Cochise Airlines to serve Kingman, Prescott, and Winslow (plus Blythe) on a subsidized basis for a limited experimental period, and Sky West Aviation to do the same for Page. Cochise Airlines was permitted to serve Page on an unsubsidized basis, and Sky West was authorized to serve, without subsidy, the points awarded to Cochise Airlines.

The CAB chose at that time not to add additional subsidized points to the certificated system, and Douglas/Bisbee, Ft. Huachuca/Sierra Vista, and Lake Havasu were therefore not included in the subsidized system. The board modified the certificates of Frontier Airlines and Hughes Airwest to make service on routes affected by the above decisions permissive and subsidy ineligible.

EFFECTS OF THE AIRLINE DEREGULATION ACT OF 1978

The environment for commercial air transportation was dramatically altered in October, 1978, when Congress passed the Airline Deregulation Act of 1978. The legislation followed a short period in which the CAB had itself been substantially altering its approach to regulation, but the new law itself both accelerated and expanded the changes.

The law has a number of major provisions that can be mentioned only briefly here. The board's controls over

entries and exits were sharply reduced with remaining control over entry to expire at the end of 1981. CAB control over air fares was reduced, and remaining CAB controls over fares will cease on January 1, 1983. The board itself is slated to expire on January 1, 1985, and responsibility for decisions involving discriminatory or predatory pricing, etc. and merger cases will pass to the Justice Department. The Department of Transportation will assume responsibility for administering the subsidy program for air service. The continuing subsidy program will result largely from one of the act's most significant features from the standpoint of Arizona air service. The act guarantees "essential" air service to "eligible" points for a ten-year period following passage of the act.

It is still much too early to evaluate the probable long-term outcome of this legislation. The effect of the new law at this time, however, can be analyzed with respect to Phoenix and Tucson, and the effects on the smaller Arizona communities. Braniff, Eastern Airlines, Northwest Airlines, PSA, Republic, and USAir (Allegheny) have entered one or both of these markets, and these carriers will probably be joined in the near future by Ozark and United Airlines with still others possibly following. Service levels are clearly up in some respects, e.g., more carriers and more nonstop flights. The number of flights serving Phoenix increased from 1,049 on Sept. 1, 1978 to 1,355 on Sept. 1, 1979, a 29 percent increase. The total number of seats on these flights increased by a lesser amount — about 18.7 percent. During the same period flights in Tucson increased approximately 21 percent and number of available seats increased 19.5 percent. Phoenix and Tucson both have relatively high levels of service for cities of comparable size although neither is a significant operating hub for airlines. Operating hubs that serve as connecting points for flights generate a high level of flight activity relative to the volume of traffic actually originating or terminating at the airport. Over 70 percent of the traffic that moves through Atlanta's Hartsfield Airport, for example, is made up of connecting passengers. On the other hand, the relatively high number of flights serving Phoenix and Tucson is partly a reflection of the high tourist traffic these cities generate.

Virtually all of the routes being served by the new carriers were previously being served, however, and the increased number of carriers and flights are not without their problems, (such as airport congestion). Some observers think that excessive competition will develop as a result of deregulation and that this will be detrimental to a stable system of air transportation. However, even if problems do arise on some routes and for some carriers,

Phoenix and Tucson both appear to be well positioned to retain a relatively high overall level of air service.

In the near future, the fate of air service to Arizona's small cities rests primarily upon the guaranteed air service provisions of the Deregulation Act. By constitutional provision, the State of Arizona is not permitted to give financial aid to private entities. Therefore, the main role of the state agencies with respect to air service occurs when the Arizona Department of Transportation intervenes on behalf of communities in seeking service under the Deregulation Act's provisions or in seeking other types of federal aid.

As noted, the Deregulation Act guarantees essential air transportation to eligible points for ten years after the act became law. Basically, a point is eligible for guaranteed essential air transportation if, on the date of enactment of the act, any carrier: (a) was providing service pursuant to a certificate issued to such carrier under Section 401 of the Federal Aviation Act; or (b) was authorized, pursuant to such certificate, to provide such service, but such service was suspended on the date of enactment of the Deregulation Act.

The act defines essential air transportation as: scheduled air transportation of persons to a point provided under such criteria as the Board determines satisfies the needs of the community concerned for air transportation to one or more communities of interest

and insures access to the Nation's air transportation system, at rates, fares and charges which are not unjust, unreasonable, unjustly discriminatory, unduly preferential, or unduly prejudicial.

The CAB makes its determination "after considering the views of any interested community, and the state agency (ADOT) of the state in which each community is located." In addition to the points included in the above conditions, beginning in 1982 the CAB may declare eligibility for subsidy, service to points deleted from certificates between July 1, 1968 and October 16, 1978 (e.g., Douglas).

In November, 1979, the initial decision of the board under this act relating to guaranteed air transportation resulted in the proposed service levels indicated in Table 1. Since that time the Arizona Department of Transportation has appealed the CAB decision which reduced the available number of seats eligible for subsidy on daily flights serving Kingman and Prescott. The Arizona Department of Transportation recommended thirty seats a day between Prescott and both Phoenix and Las Vegas, and the same level of service between Kingman and the same two cities. This recommendation, in part, reflected efforts to encourage the establishment of service in nineteen-passenger, pressurized, turboprop aircraft rather than with the smaller, twin-engine aircraft that could provide the service levels set by the

TABLE 1
GUARANTEED AIR TRANSPORTATION FOR ELIGIBLE POINTS IN ARIZONA

<i>Community</i>	<i>Original Potential Carrier(s)</i>	<i>Number of Roundtrip Flights</i>	<i>Total Number of Seats Per Day or Weekend</i>	<i>Destination</i>
Flagstaff	Desert Air Services** Cochise Airlines Sky West Aviation	Two daily (nonstop)	80 each way	Phoenix
Grand Canyon	Air West	Two daily (nonstop)	80 each way	Las Vegas
Kingman	Cochise Airlines*	Two daily, M-F Two on weekends (one stop service permitted)	6 each way	Phoenix
Page	Sky West Aviation*	Two daily, M-F Two on weekends (two stop service permitted)	26 each way	Phoenix or Las Vegas
Prescott	Cochise Airlines*	Two daily, M-F Two on weekends (nonstop)	8 each way	Phoenix
Winslow	Cochise Airlines Desert Air Services**	Two daily, M-F Two on weekends	6 each way	Phoenix
Yuma	Cochise Airlines* Imperial Airlines Sun Air Baja Cortez	Two daily	80 each way	Phoenix and Los Angeles

*Carrier actually offering subsidized service as of August, 1980.

**No longer in operation.

Source: Civil Aeronautics Board.

CAB. The cities of Kingman and Prescott have also appealed to CAB decision. It is likely that Douglas, which at one time received subsidized service, will seek new service under the Deregulation Act when it becomes eligible to do so in 1982.

A study done for the Four Corners Regional Commission identified five routes in which the annual economic benefits would exceed total annual service costs (subsidy): (1) Holbrook-Show Low-Phoenix, (2) Sedona-Phoenix, (3) Phoenix-Tucson-Sierra Vista, (4) Winslow-Flagstaff-Phoenix, and (5) Page-Kanab, Utah-St. George, Utah.⁴ The study also suggested that these routes could be free of subsidy within five years of initiating operations.

Funding for air service has also been available from some federal sources other than the CAB. The Four Corners Regional Commission sought to obtain \$7.3 million for expansion of air service between Kingman, Prescott and Phoenix and Las Vegas. The funding would have come from a three-year White House Rural Development Initiatives Task Force Program. Budget cuts, however, blocked the funds.

Depending on the city and the evaluator, differences occur in the evaluations of the adequacy of the levels of service deemed eligible for subsidy by the CAB. Individual cities naturally are concerned with specific routes, number of flights, number of seats on flights, etc. For example, both Prescott and Kingman hoped for guaranteed service to Las Vegas as well as to Phoenix, and Yuma has been particularly concerned about the size of aircraft providing service to that city.

The overall effects of the Deregulation Act (along with other factors such as economic conditions) have been mixed. Generally service has been improved by more frequent flights, flights at more convenient times, and flights to more points. In some cases the substitution of smaller aircraft has resulted in a deterioration of one facet of service levels. It seems likely, however, that service by larger aircraft to the smaller cities would have been further curtailed eventually even without deregulation as a result of the economic realities arising from the increasing costs of fuel, load factor requirements, etc.

It should be emphasized that service to a number of smaller Arizona cities is presently provided by commuter airlines without benefit of subsidy. Among Arizona cities receiving scheduled service by commuter airlines in August, 1980, were Bagdad, Lake Havasu, Sedona, Taylor, Show Low, Douglas, Sierra Vista, and Whiteriver. At that time there were twelve commuter airlines serving Arizona points with only two of these receiving subsidy on service to some points. The commuter sector of the airline industry has had a significant level of entry

and exit. This is true in terms of firms going into and out of the commuter airlines business, and in terms of commuter airlines that continue in business but enter new markets and exit markets previously served. This is likely to continue in the future. Indeed, the rest of the airline industry will undoubtedly be characterized by a much higher level of entry and exit in the future than in the past with respect to both carriers and particular markets.

An especially critical factor in the long-term success of commuter airlines is safety. The safety record of commuter airlines has been less than satisfactory, and the Federal Aviation Agency (FAA) has substantially increased safety standards for safety equipment, pilot training, maintenance requirements, etc.; it has also increased the number of inspections it performs. The desire to foster safety and dependability is one of the reasons the Arizona Department of Transportation (ADOT) is seeking to ensure that local service is provided by aircraft of nineteen-passenger size or larger, where practical. The fact that the larger aircraft are more likely to be pressurized is a significant factor in terms of dependability of service and potential comfort for passengers as well.

Another critical factor in the success of commuter airlines is access to an adequate airport system. It is beyond the scope of this paper to discuss airports in detail, but it should be noted that ADOT is actively involved along with the FAA and individual cities in planning and financing efforts to assure an effective system of airports.

AIR FREIGHT

Although this article is primarily concerned with air passenger transportation, a brief comment on air freight may be useful. Congress completed deregulation of air freight in October, 1978. Today, any firm may enter the air freight business (subject to Federal Aviation Administration certification regarding safety, etc.), on any routes, with only the normal constraints on pricing, such as antitrust laws.

As with passenger service, it is still too early to evaluate the ultimate effect on the price and quality of air freight service that deregulation will have. In the short run, however, it is ironic that the deregulation of passenger service has probably had more of an effect on freight service in some Arizona communities than the deregulation of freight itself. In communities such as Yuma, the local service carriers (Hughes Airwest, for example) halted service with their relatively large jet aircraft and were replaced by airlines, such as Cochise,

with much smaller aircraft. These smaller aircraft have limited capacity for "belly" freight. In a situation where passenger service might be improved by substituting three flights with small aircraft for a single flight with one large aircraft, freight service might suffer because of the reduction in airlift or freight capacity. This is, of course, especially critical for large individual pieces of freight. Cochise has instituted service to Yuma with a relatively large Convair turboprop aircraft mainly to cope with complaints about inadequate freight capacity.

The Motor Carrier Act of 1980 exempted from economic regulation freight movements by truck that are a part of a continuous movement and have a prior or subsequent movement by an air carrier. This permits the airlines to offer combined air and highway service to many points using cities such as Phoenix as hubs. Direct freight service for Phoenix and Tucson is primarily in the form of combination passenger-freight flights with the exception of all cargo service offered by Federal Express, which primarily handles small shipments.

LOOKING AHEAD

The regulatory and economic changes that are still taking place in the airline industry make it especially difficult to forecast the long-term future of this industry. Air travel on the major domestic carriers was down by 5 percent in the first eight months of 1980 as compared with the same period in 1979. In October, 1980, air fares were up by more than 30 percent over the same time a year earlier. However, yields (actual revenues per passenger mile) were not up by a corresponding amount because more passengers are using discount fares. Approximately 66 percent of the passengers on major airlines flew on discount fares in summer of 1980. Airlines are continuing to raise fares and are increasing restrictions on discount fares; furthermore, many airlines are reducing the amounts of the discounts. The continuing escalation of fuel costs hits the airline industry extremely hard. As recently as 1973, fuel costs represented only about 12 percent of airline operating costs, but by the middle of 1980 fuel costs had grown to over 30 percent of airline operating costs.

There will almost certainly be some business failures among the commuter airlines, and the traumatic conditions affecting the industry may even lead to some failures among the major carriers. It is highly likely that more mergers will occur, such as between Continental Airlines and Western Airlines, in addition to those mergers and acquisitions that have recently taken place, as in Republic's acquisition of Hughes Airwest.

Despite the recent drop in passengers carried by the airlines, there is little doubt that the long-term trend will be upward. The Federal Aviation Agency forecast 500 million passengers annually by the end of this decade — up from 317 million passengers in 1979.

The reduction and eventual removal of economic regulation should permit airline management to respond more rapidly and effectively to the changing circumstances the industry will face. For individual firms the results may sometimes be disastrous, but the industry as a whole and the public should ultimately benefit from reduced regulation. It might be noted that the benefits may be partially obscured due to such factors as rising fuel costs and the need to replace or retrofit some aircraft to meet stricter noise standards.

SUMMARY

Air service to Phoenix and Tucson is expected to continue at a satisfactory level in the future. At least seven Arizona cities will be assured "essential" air service approximately through 1988; however, there may be some dispute about the adequacy of the levels determined by the CAB to be "essential." Subsidies from federal sources other than the CAB (the Department of Transportation when the CAB expires) are possible in the future, but these are likely to be limited to experimental programs and, if available at all, will probably be restricted to a very limited number of communities and for limited periods of time. Some market segments, particularly those that receive no federal subsidy, will likely experience service levels that fluctuate as airlines enter and exit those markets. The overall development of commuter airline service in Arizona will depend on a wide variety of factors including economic conditions, safety records, and adequacy of airports.

¹*Air Transport 1979*, Air Transport Association, Washington, D.C. June 1, 1979, p. i.

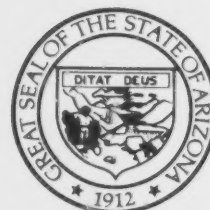
²"Losses Greater than Forecast," *Aviation Week and Space Technology*, August 4, 1980, pp. 28-29.

³Subsidies to trunk lines were ended in 1955, with the exception of

Northeastern Airlines which was receiving subsidy at the time of its merger with Delta Air Lines.

⁴*Four Corners Commuter Air Service Study*, prepared by Landrum and Brown Aviation Consultants (Booz-Allen and Hamilton, Inc.); funded by the Four Corners Regional Commission, no date, pp. 14-17.

The Arizona Business Scene



Transportation in Arizona: An Overview

The three major modes of transportation in Arizona — highway, air, and railroad — move both people and goods, while the fourth mode of transportation — pipelines — moves only specific types of goods. The state's geography, size, and population distribution dictate that certain modes of transportation — auto, truck, and airplane — are more heavily utilized in Arizona than in most other states.

The transportation industry in Arizona employed an average of 22,100 people in 1979, 2.3 percent of the state's total employment. From 1970 to 1979, transportation employment grew 55 percent, a slightly slower growth rate than employment as a whole.

The highway system in Arizona consists of some 56,000 miles of road. Numerous types of motor vehicles use these roads: private passenger vehicles (automobiles, pickup trucks, motorcycles), public passenger vehicles (buses, vans, and taxis), and trucks for the transportation of goods. A summary of motor vehicle statistics is provided in Table 1. Highways and passenger transportation are discussed in depth in other articles of this issue.

The commercial trucking industry moves much of the freight in Arizona. Trucks are ideally suited to carry goods to the small, widely dispersed communities throughout Arizona. Many communities are almost totally dependent on trucking for business and consumer products.

TABLE 1

MOTOR VEHICLE TRANSPORTATION STATISTICS

	<i>Registrations</i>			
	<i>All Vehicles</i>	<i>Passenger Vehicles</i>	<i>Motor Vehicle Mileage</i>	<i>Motor Vehicle Fuel Consumption</i>
1970	1,510,738	827,579	12,122,438,000	1,023,461,000
1979	2,037,278	1,259,866	19,248,962,000	1,536,230,000
Percentage Change	55	66	59	50

Source: Arizona Department of Transportation, Motor Vehicle Division.

There are 7,100 for-hire motor carriers operating in Arizona. These carriers move nearly 70 percent of the agricultural goods in Arizona and most of the manufactured commodities. Some of these carriers move goods intrastate only, but most are interstate carriers, moving goods into and out of Arizona as well as from community to community within Arizona.

Because of the distance between Arizona communities and from major population centers in other states, air service is of considerable importance in Arizona. Two major airports, Phoenix Sky Harbor International and Tucson International, are the primary centers for both air freight service and passenger travel. Phoenix Sky

Harbor airport, which recently completed a major expansion, is now the eleventh largest airport in the United States in number of flights and twenty-sixth largest in number of airline passengers. Phoenix is served by nineteen airlines; Tucson is served by eleven airlines. Growth statistics for these airports are shown in Table 2. In addition to these two large airports, several other airports throughout the state are served by commercial airlines, and numerous small general aviation airports handle other aircraft.

TABLE 2
AIR TRANSPORTATION STATISTICS

	<i>Phoenix</i>		<i>Tucson</i>	
	<i>Passengers</i>	<i>Air Freight</i>	<i>Passengers</i>	<i>Air Freight</i>
1970	2,871,900	37,965,000	922,100	15,595,000*
1979	7,021,985	70,363,000	1,948,200	17,453,000
Percentage Change	144	85	111	12

*Estimated.

Sources: City of Phoenix Aviation Department, Tucson Airport Authority.

Due to Arizona's mountainous terrain and widely dispersed small population centers, rail service is relatively less important in Arizona than in most states.

About 2,000 miles of railroad track are operational in the state, and no new track has been added for a number of years. For a more complete discussion of rail operations, refer to the accompanying article on "Arizona's Railroad System."

The importance of pipelines as a mode of transportation is generally not recognized. Yet pipelines are unobtrusive, safe, and generally economical. While pipelines are highly specialized in what they carry, their importance to what they do carry is significant: Over 70 percent of Arizona's energy requirements are dependent upon pipelines. There are major pipelines in Arizona for each of the following products: petroleum products, crude oil, natural gas, and coal slurry.

While certain modes of transportation are more suitable for Arizona's geography and population distribution, all are important aspects of Arizona's economy. Transportation plays a major role in shaping local development by molding the location of economic activity, the size and spread of cities, and the style and pace of life. This is demonstrated by the development of both urban and rural areas in Arizona. However, current and potential problems do exist within Arizona's transportation network. Phoenix confronts problems now as its rapid growth has exceeded the growth of its roads and highways. The entire state faces a future problem financing highway maintenance and construction. Arizona, like the entire country, faces potential problems of availability and cost of energy to fuel its transportation.

A Survey of Arizona Business Conditions

HAROLD FEARON

The recession bottomed out in July; the beginnings of an upturn were evident in August; and the economy continued to gain strength in September, according to the monthly business survey of the Purchasing Management Association of Arizona. For the first time since last March the indicators of new orders received, production, and employment all were positive, giving good evidence that the recession is over and the Arizona economy once again has resumed an upward path.

The purchasing business survey now is beginning its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Prices paid for major purchased items moved up again in September at a higher month-to-month increase rate than in August and the highest rate since last May. Higher prices were reported by 52 percent of the purchasing managers; 43 percent said prices were un-

changed; and 5 percent paid lower prices in September than in August. After eight months of a declining price increase trend which began last January, it now appears that the direction has changed as economic growth resumes, and the inflation rate will become more pronounced in the fourth quarter. While the monthly price increase rate still is much lower than recorded during the first part of the year, the problem of an unacceptably high price increase rate still is with us and likely will intensify over the next several months.

Delivery time on shipments from vendors lengthened, and at a rate twice as great as in August. Faster deliveries were reported by 16 percent of the firms, but 23 percent saw a stretch-out in vendor delivery times. This was the second month in which longer delivery times were reported, following three months (May through July) when Arizona firms got faster service from their suppliers. This reinforces the assessment that the low point in the current business cycle has been passed and the Arizona economy again is in an upswing.

Inventory levels of purchased materials dropped still further in September, but the decrease was quite small, with 26 percent of the firms adding to inventory compared to 30 percent who pared stocks. This was the sixth consecutive month of inventory reductions. The reductions have been decreasing over each of the past four months, and the small reduction in September (the lowest of any of the six monthly reductions) indicates that the inventory liquidations are about over. This will end the inventory drag on the economy, as firms again

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begin to buy goods to support current production instead of meeting production demands from purchased materials bought in some previous time period. One of the key reasons for the short duration of the past recession has been that inventory imbalances have not been severe and major inventory reductions were not necessary.

New orders received from customers increased in September for the second consecutive month, and at a strong rate, following the net reductions in the four months of April through July. An increase in order bookings was reported by 39 percent of the firms, compared to the 25 percent who received less new business in September than in August. This was the largest monthly increase rate in a year (since September, 1979) and shows that the drop in vitality suffered by the Arizona economy was only temporary and now has been corrected.

Production went up, for the second consecutive month, and at a rate substantially higher than in August. Higher production was reported by 32 percent of the firms; only 26 percent had reduced output. Production follows the new order rate closely and can be expected to increase further over the next several months.

Employment in Arizona firms turned positive in September, for the first month following the four decreases (May through August) during the recession. Higher employment was reported by 23 percent of the

firms, while 18 percent pared payrolls. This was the largest monthly increase since last February and provides further evidence that the recession is behind us and the Arizona economy once again is moving upward.

Thus, all economic indicators in September point to an upswing. The recession lasted only four months, which was short, and it was quite shallow in its effects on the Arizona economy. There is no guarantee that the current recovery will be strong or of long duration, but it is starting out on a very positive note and the fourth quarter should see good economic advances.

The results of the September survey are shown in Table 1.

TABLE 1
SEPTEMBER PURCHASING SURVEY

Key Indicators	Percent of Purchasing Managers Indicating Each Response (September compared to August)		
	Higher	Same	Lower
Prices paid for major commodities	52	43	5
Delivery time from vendors	23	61	17
Purchased materials inventory level	26	44	30
New orders received	39	36	25
Production	32	42	26
Employment	23	59	18

Source: Survey of the Purchasing Management Association of Arizona.

ARIZONA SALES OF ELECTRICAL POWER

By Month
(In millions of kwh)

	Actual		Percent Change Current Month From	
	1980	1979	Same Month Previous Year	Previous Month
August	3,165.8	2,997.0	5.6	-4.5

Source: Based on reports from major suppliers.

Arizona New Housing Starts: Monthly Report

AUGUST, 1980

BUILDING PERMITS ISSUED

1*
Family Duplex Families 3-4 5 or More Housing Units

APACHE COUNTY	5	—	—	—	5
Eagar	5	—	—	—	5
St. Johns	—	—	—	—	—
Springerville	—	—	—	—	—
Uninc. Apache Co.	—	—	—	—	—
COCHISE COUNTY	73	—	—	—	73
Benson	1	—	—	—	1
Bisbee	—	—	—	—	—
Douglas	6	—	—	—	6
Huachuca City	—	—	—	—	—
Sierra Vista	40	—	—	—	40
Tombstone	2	—	—	—	2
Uninc. Cochise Co.	20	—	—	—	20
Willcox	4	—	—	—	4
COCONINO COUNTY	122	—	—	—	122
Flagstaff	37	—	—	—	37
Fredonia	1	—	—	—	1
Page	19	—	—	—	19
Uninc. Coconino Co.	65	—	—	—	65
Williams	—	—	—	—	—
GILA COUNTY	42	1	—	1	49
Globe	2	1	—	—	4
Hayden	—	—	—	—	—
Miami	—	—	—	—	—
Payson	19	—	—	1	24
Uninc. Gila Co.	21	—	—	—	21
GRAHAM COUNTY	26	—	—	—	26
Pima	—	—	—	—	3
Safford	4	—	—	—	4
Thatcher	1	—	—	—	1
Uninc. Graham Co.	18	—	—	—	18
GREENLEE COUNTY	—	—	—	—	—
Clifton	—	—	—	—	—
Duncan	—	—	—	—	—
Uninc. Greenlee Co.	—	—	—	—	—
MARICOPA COUNTY	1,967	18	26	17	2,542
Avondale	7	—	—	—	7
Buckeye	—	—	—	—	—
Chandler	233	—	6	—	257
El Mirage	—	—	—	—	—
Gila Bend	2	—	—	—	2
Gilbert	21	—	—	—	21
Glendale	184	—	—	1	200
Goodyear	—	—	—	—	—
Guadalupe	2	—	—	—	2
Mesa	232	15	2	2	420
Paradise Valley	10	—	—	—	10
Peoria	51	—	—	—	51
Phoenix	605	3	11	3	814
Scottsdale	124	—	—	—	124
Surprise	1	—	—	—	1
Tempe	76	—	7	11	214
Tolleson	—	—	—	—	—
Uninc. Maricopa Co.	149	—	—	—	419
Wickenburg	—	—	—	—	—
Youngtown	—	—	—	—	—

BUILDING PERMITS ISSUED

1*
Family Duplex Families 3-4 5 or More Housing Units

MOHAVE COUNTY	175	—	—	—	1	225
Kingman City	10	—	—	—	—	10
Kingman Area	26	—	—	—	—	26
Lake Havasu City	52	—	—	—	1	102
Lake Havasu Area	8	—	—	—	—	8
Mohave Valley North	41	—	—	—	—	41
Mohave Valley South	21	—	—	—	—	21
Dolan Springs	7	—	—	—	—	7
Sacramento Valley	6	—	—	—	—	6
Mohave Co. General	4	—	—	—	—	4
NAVAJO COUNTY	104	—	—	—	—	104
Holbrook	5	—	—	—	—	5
Show Low	6	—	—	—	—	6
Snowflake	6	—	—	—	—	6
Taylor	3	—	—	—	—	3
Uninc. Navajo Co.	83	—	—	—	—	83
Winslow	1	—	—	—	—	1
PIMA COUNTY	531	13	6	7	—	650
Marana	1	—	—	—	—	1
Oro Valley	1	—	—	—	—	1
South Tucson	1	—	—	—	—	1
Tucson	158	11	6	7	—	273
Uninc. Pima Co.	370	2	—	—	—	374
PINAL COUNTY	64	—	3	—	—	76
Casa Grande	17	—	1	—	—	21
Coolidge	5	—	—	—	—	5
Eloy	—	—	—	—	—	—
Florence	—	—	—	—	—	—
Kearny	2	—	—	—	—	2
Mammoth	—	—	—	—	—	—
Superior	1	—	—	—	—	1
Uninc. Pinal Co.	39	—	2	—	—	47
SANTA CRUZ COUNTY	10	—	—	—	—	10
Nogales	N/R	N/R	N/R	N/R	N/R	N/R
Patagonia	1	—	—	—	—	1
Uninc. Santa Cruz Co.	9	—	—	—	—	9
YAVAPAI COUNTY	150	—	1	1	—	159
Chino Valley	13	—	—	—	—	14
Clarkdale	1	—	—	—	—	1
Cottonwood	5	—	—	—	—	5
Jerome	N/R	N/R	N/R	N/R	N/R	N/R
Prescott	12	—	—	—	—	12
Uninc. Yavapai Co.	87	—	—	1	—	93
Prescott Valley	31	—	1	—	—	34
YUMA COUNTY	63	1	—	—	—	65
Parker	—	—	—	—	—	—
Somerton	2	—	—	—	—	2
Uninc. Yuma Co.	40	—	—	—	—	40
Wellton	—	—	—	—	—	—
Yuma	21	1	—	—	—	23
TOTAL, Maricopa Co., August, 1980	1,967	18	26	17	—	2,542
TOTAL, Maricopa Co., August, 1979	1,820	25	22	40	—	3,083
PERCENT CHANGE	8	-28	18	-57	—	-18
TOTAL, Arizona, August, 1980	3,332	33	36	27	—	4,106
TOTAL, Arizona, August, 1979	3,617	37	43	50	—	5,328
PERCENT CHANGE	-8	-11	-16	-46	—	-23

*Includes mobil homes

N/R: No report; data for this month will be combined with data reported for the following month.

AUGUST, 1980

Arizona Building Permits: Monthly Report

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value	
APACHE COUNTY															
Eagar	9	189,700		—	—		—	—		1	1,000		10	1,000	
St. Johns	6	170,700		—	—		—	—		1	1,000		7	171,700	
Springerville	—	—		—	—		—	—		—	—		—	—	
Uninc. Apache Co.	2	19,000		—	—		—	—		—	—		2	19,000	
COCHISE COUNTY															
Benson	139	2,802,472		11	293,726		—	—		89	321,398		239	3,417,596	
Busbee	2	18,750		2	14,000		—	—		2	3,500		6	36,250	
Douglas	28	21,016		—	—		—	—		1	92,000		29	113,016	
Huachuca City	14	384,198		1	125,026		—	—		15	40,585		30	549,809	
Sierra Vista	8	7,730		—	—		—	—		1	2,500		9	10,230	
Tombstone	53	1,555,244		1	40,000		—	—		56	78,658		110	1,673,902	
Uninc. Cochise Co.	3	4,500		1	19,000		—	—		4	1,075		8	20,575	
Wilcox	26	620,459		6	99,700		—	—		10	103,080		42	823,239	
COCONINO COUNTY															
Flagstaff	244	4,884,587		4	981,344		1	750		60	776,060		309	6,642,641	
Fredonia	71	2,606,623		4	981,244		—	—		30	680,918		105	4,268,785	
Page	3	7,600		—	—		1	750		5	17,500		9	25,850	
Uninc. Coconino Co.	26	508,470		—	—		—	—		5	50,000		31	558,470	
Williams	144	1,761,894		—	—		—	—		4	8,340		148	1,770,234	
GILA COUNTY															
Globe	65	1,013,587		11	253,770		—	—		16	19,302		16	19,302	
Hayden	12	117,100		—	—		—	—		42	76,076		118	1,343,433	
Miami	2	1,900		—	—		—	—		1	500		3	2,400	
Payson	21	329,769		—	—		—	—		1	26,076		66	570,648	
Uninc. Gila Co.	30	564,818		10	214,803		—	—		35	615,285		56	1,135,241	
GRAHAM COUNTY															
Pima	39	588,316		2	38,967		—	—		5	9,500		46	748,666	
Safford	3	19,200		—	—		—	—		—	—		3	19,200	
Thatcher	14	158,300		2	150,500		—	—		3	850		19	309,650	
Uninc. Graham Co.	1	50,000		—	—		—	—		2	9,000		3	59,000	
GREENLEE COUNTY															
Clifton	21	360,816		—	—		—	—		1	400		21	360,816	
Duncan	1	2,000		—	—		—	—		—	—		2	2,400	
Uninc. Greenlee Co.	1	2,000		—	—		—	—		1	400		2	2,400	
MARICOPA COUNTY															
Avondale	2,574	73,172,396		117	28,971,566		48	7,466,868		1,663	17,262,143		4,402	126,872,973	
Buckeye	8	141,500		1	65,000		—	—		5	100,200		14	306,700	
Chandler	4	9,700		—	—		—	—		1	34,700		5	48,400	
El Mirage	248	7,446,794		7	604,560		—	—		235	545,401		490	8,596,755	
Gila Bend	—	—		—	—		—	—		—	—		—	—	
Gilbert	2	41,000		—	—		—	—		—	—		2	41,000	
Glendale	28	1,089,840		—	—		1	5,000		12	40,401		41	1,135,241	
Goodyear	213	6,041,575		16	2,777,000		—	—		228	1,166,752		457	9,985,327	
Guadalupe	—	—		1	150,000		—	—		8	847,899		9	997,899	
Mesa	4	38,100		—	—		—	—		—	—		4	38,100	
Paradise Valley	278	4,934,229		6	4,557,975		1	13,000		225	1,450,750		510	10,955,954	
Peoria	16	1,278,000		—	—		—	—		60	184,872		76	1,462,872	
Phoenix	54	1,286,510		2	3,200		1	25,600		6	28,744		63	1,344,054	
Scottsdale	827	28,846,797		33	15,583,274		16	4,235,168		550	8,748,143		1,426	57,413,382	
Surprise	158	6,410,990		5	796,137		—	—		170	1,531,040		333	8,538,167	
Tempe	2	16,200		—	—		—	—		4	8,350		6	24,550	
Tolleson	120	2,795,400		33	3,971,600		29	3,188,100		49	1,919,400		231	11,818,500	
Uninc. Maricopa Co.	8	24,521		—	—		—	—		8	737,415		8	14,012,903	
Wickenburg	584	12,812,668		13	462,820		—	—		103	737,415		700	14,012,903	
Youngtown	—	—		—	—		—	—		7	127,776		27	142,348	

Arizona Building Permits: Monthly Report (Continued)

AUGUST, 1980

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value	
MOHAVE COUNTY															
Kingman City	283	4,404,967		19	1,122,071		—	—		201	426,618		503	5,953,656	
Kingman Area	24	382,983		7	339,800		—	—		9	10,075		40	732,858	
Lake Havasu City	40	367,772		—	—		—	—		36	28,372		76	396,144	
Lake Havasu Area	59	1,930,652		3	566,090		—	—		10	49,113		72	2,545,855	
Mohave Valley North	16	155,744		—	—		—	—		6	12,563		22	168,307	
Mohave Valley South	72	861,443		8	150,648		—	—		90	234,259		170	1,246,350	
Dolan Springs	37	375,916		1	65,533		—	—		33	67,252		71	508,701	
Sacramento Valley	17	132,286		—	—		—	—		13	18,174		30	150,460	
Mohave County General	8	115,353		—	—		—	—		4	6,810		12	122,163	
NAVJO COUNTY	10	82,818		—	—		—	—		7	801,200		10	82,818	
Holbrook	170	3,395,800		2	232,000		—	—		—	—		179	4,429,000	
Show Low	7	246,900		—	—		—	—		—	—		7	246,900	
Snowflake	8	32,956		2	232,000		—	—		2	1,200		12	266,156	
Taylor	6	N/C		—	—		—	—		4	N/C		10	N/C	
Unic Navajo Co.	3	180,500		—	—		—	—		—	—		3	180,500	
Winslow	141	2,856,444		—	—		—	—		—	—		141	2,856,444	
PIMA COUNTY	739	27,337,387		43	11,872,732		—	—		—	—		6	879,000	
Marana	1	N/C		—	—		—	—		—	—		1	46,077,192	
Oro Valley	1	45,000		—	—		—	—		—	—		1	N/C	
South Tucson	14	52,569		2	3,500		—	—		—	—		16	45,000	
Tucson	268	5,189,525		30	7,192,832		—	—		227	5,260,919		525	56,069	
Unic Pima Co.	455	22,050,293		11	4,676,400		—	—		285	1,606,154		751	17,643,276	
PINAL COUNTY	90	1,633,880		6	270,700		—	—		42	258,175		138	28,332,847	
Casa Grande	20	735,121		1	105,700		—	—		11	59,964		32	2,162,755	
Coolidge	9	48,536		—	—		—	—		2	15,000		11	900,785	
Floy	1	3,300		—	—		—	—		1	5,779		2	63,536	
Florence	2	2,000		—	—		—	—		4	12,350		6	9,079	
Keatney	3	35,500		—	—		—	—		2	20,000		5	14,350	
Mammoth	1	18,000		—	—		—	—		2	73,000		2	55,500	
Superior	1	N/C		1	55,000		—	—		—	—		2	73,000	
Unic Pinal Co.	53	791,423		3	105,000		—	—		1	1,500		3	6,500	
SANTA CRUZ COUNTY	10	527,667		—	—		—	—		21	143,582		77	1,040,005	
Nogales	1	30,000		N/R	N/R		N/R	N/R		2	14,991		12	542,658	
Patagonia	1	497,667		—	—		—	—		N/R	N/R		N/R	N/R	
Unic Santa Cruz Co.	9	4,443,517		—	—		—	—		—	—		1	30,000	
YAVAPAI COUNTY	265	311,466		11	823,689		—	—		2	14,991		11	512,658	
Chino Valley	20	60,200		—	—		—	—		88	234,011		364	5,501,217	
Clarkdale	8	92,797		—	—		—	—		10	9,460		50	320,926	
Cottonwood	15	N/R		1	45,500		—	—		—	—		8	60,200	
Jerome	N/R	N/R		N/R	N/R		N/R	N/R		N/R	N/R		16	138,297	
Prescott	44	450,712		2	197,777		—	—		—	—		N/R	N/R	
Unic Yavapai Co.	132	2,932,367		5	486,500		—	—		46	92,164		92	740,653	
Prescott Valley	46	595,975		3	93,912		—	—		31	122,787		168	3,541,654	
YUMA COUNTY	99	2,275,756		2	146,833		—	—		1	9,600		50	699,487	
Parker	2	16,600		—	—		—	—		38	682,855		139	3,105,444	
Somerton	2	75,000		—	—		—	—		—	—		2	16,600	
Unic Yuma Co.	50	919,687		1	99,520		—	—		2	2,000		4	77,000	
Wellton	—	—		—	—		—	—		9	424,632		60	1,443,859	
Yuma	45	1,264,469		1	47,313		—	—		—	—		—	—	
TOTAL Maricopa County, August, 1980	2,574	73,172,596		117	28,971,566		—	—		27	256,223		73	1,568,005	
TOTAL Maricopa County, August, 1979	2,521	61,566,778		182	52,738,959		—	—		1,663	7,466,868		4,402	126,872,973	
PERCENT CHANGE	2	19		-36	-45		—	—		2,053	20,727,573		4,820	148,101,440	
TOTAL Arizona, August, 1980	4,727	126,672,032		228	45,118,831		—	—		-19	-17		-9	-14	
TOTAL Arizona, August, 1979	5,636	115,825,592		312	78,480,882		—	—		2,751	27,731,850		7,755	206,990,331	
PERCENT CHANGE	-16	9		-27	-43		—	—		2,919	33,190,703		8,959	241,052,798	

N/C: Not collected. N/R: No report; data for this month will be combined with data reported for the following month.

*Includes mobile homes.

Maricopa County Retail Food Prices

SEPTEMBER, 1980

Retail food prices in Maricopa County rose 1.9 percent in September. This gain, which follows a 1.3 percent increase in August, is the largest monthly increase since December, 1979.

The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The September index of 249.5 indicates that shoppers would now have to pay \$24.95 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$22.18 one year ago. The September, 1980, index reflects a 12.5 percent increase over the September, 1979, value.

Gains in all but one of the subgroups were responsible for the higher September index. Prices in the *Fruits and Vegetables* subgroup jumped 6.2 percent, followed by *Meats, Poultry, Fish, and Eggs*, up 2.1 percent. *Other Foods* and *Dairy Products* both rose 1.1 percent, while *Cereal and Bakery Products* declined 0.8 percent.

The surge in lettuce prices (67.3 percent) accounted for a large part of the increase in *Fruits and Vegetables*. Prices of most other items in this category also climbed, notably potatoes (24.2 percent), bananas (13.6 percent), and oranges (10.5 percent).

Prices continue to escalate in the *Meats, Poultry, Fish,*

and Eggs subgroup. All pork items rose this month, especially bacon (8.2 percent), pork chops (6.5 percent), and noncanned ham (3.6 percent). Also increasing were fresh and frozen chicken parts (11.0 percent), eggs (6.1 percent), and rib roasts (5.9 percent). Slightly offsetting these hikes were declining prices for frankfurters (-8.7 percent), and chuck roast (-2.7 percent).

Contributing to the increase in the *Other Foods* category were rising prices for frozen prepared foods (4.6 percent), carbonated drinks (3.3 percent), and sugar/artificial sweeteners (2.6 percent). These gains were only partially offset by a decline in nuts, potato chips, and other snacks (-0.9 percent).

All items in the *Dairy Products* subgroup climbed during the month of September. Largest increases were butter (3.6 percent), followed by ice cream and related products (2.2 percent), and cheese (1.7 percent).

The slight decrease in *Cereal and Bakery Products* can be attributed partially to the dip in the prices of flour and prepared flour mixes (-4.8 percent), and in the category of fresh biscuits, rolls, and muffins (-4.1 percent). Also down were prices for white bread (-1.9 percent). These were somewhat neutralized by increases in cereal (1.2 percent), and breads other than white (0.8 percent).

A comparison of June Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a food group in June, 1980 (obtainable for \$10.00 at 1967 average prices) were \$23.79 in Maricopa County; \$24.60 in Los Angeles-Long Beach; \$25.06 in San Francisco-Oakland; \$24.99 in Chicago-Northwestern Indiana; and averaged \$24.80 in the United States.

INDEX FOR FOOD CONSUMED AT HOME
(Average 1967 = 100 percent)

Group	Maricopa County Sept. 80*	Maricopa County June 80*	United States* June 80	Los Angeles- Long Beach* June 80	San Francisco- Oakland* June 80	Chicago- North- western Indiana* June 80
Food Consumed at Home	249.5	237.9	248.0	246.0	250.6	249.9
Cereals and Bakery Products	231.7	229.1	245.9	253.1	253.7	254.1
Meats, Poultry, Fish, and Eggs	258.3	240.8	231.2	232.5	240.0	237.8
Dairy Products	213.7	210.3	227.2	220.4	221.2	219.7
Fruits and Vegetables	239.8	217.8	250.1	233.1	242.9	258.0
Other Foods Consumed at Home	275.7	268.0	301.8	299.3	309.4	302.1

*Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington D.C.

*Maricopa County food prices are reported for the month closest to publication.

*Comparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Metropolitan Phoenix Consumer Price Index

THIRD QUARTER, 1980

Prices of consumer goods and services in the Phoenix metropolitan area rose 2.6 percent during the third quarter of 1980. This increase was higher than the second quarter rate of 0.1 percent, but much lower than the 6.9 percent jump of first quarter, 1980. The rise in prices for the Phoenix area is larger than the increase posted for the United States as a whole (1.8 percent), and higher than the rates for the comparison cities of Chicago (0.9 percent), and Los Angeles-Long Beach, which posted a decrease of 0.7 percent. Since the third quarter of 1979, the annual percentage change for Phoenix of 13.9 percent is higher than the 12.8 percent increase for the nation as a whole, and for Chicago (12.2 percent) but compares favorably with the Los Angeles-Long Beach increase of 13.7 percent.

The Consumer Price Index (CPI) for the Phoenix metropolitan area, on which these inflation measures are based, is prepared by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. The quarterly CPI is based on comprehensive surveys conducted by the Bureau of Business and Economic Research in cooperative cosponsorship with Valley National Bank.

In the *Food* category, Food at Home rose 3.4 percent, the highest increase since the first quarter of 1979. An upsurge in Fruits and Vegetables (7.7 percent), coupled with a rise in Meats, Poultry, Fish, and Eggs (4.0 percent), is responsible for the higher rate of in-home food costs. Phoenix area Food at Home prices, however, compare favorably with the United States, Chicago, and

Los Angeles-Long Beach averages of 4.0 percent, 3.4 percent, and 3.6 percent respectively. Food Away from Home prices also rose (3.1 percent) during the third quarter, up from the 2.8 percentage rate posted for the second quarter.

After the extreme first quarter high of 8.6 percent and the second quarter low of -1.0 percent, the price index for the *Housing* category resumed its more normal inflationary rate with a 2.5 percent increase for the third quarter, 1980. The annual percentage change for the Phoenix area was 15.8 percent. While this is higher than the United States figure of 14.8 percent and Chicago (12.0 percent), it compares favorably with the Los Angeles-Long Beach annual increase of 16.4 percent.

Although the third quarter increase in prices appears to contradict the United States quarterly rate of 1.6 percent and the decline for Chicago (-.04 percent) and Los Angeles-Long Beach (-3.0 percent), it must be noted that the third quarter for the Phoenix CPI begins in July and does not include the sharp drop in interest rates that occurred in June, 1980. The third quarter figures for the United States and the comparison cities cover the period from June to August because of delays in publication, while the quarter for Phoenix covers the standard July to September period. This one-month lag is responsible for the difference in *Housing* rates and should not be interpreted as a sign that Phoenix area housing prices are moving in direct contrast to the rest of the country.

The increase in *Housing* for the third quarter of 1980 in Phoenix is due mainly to a 3.5 percent rise in

homeownership costs. Contracted mortgage interest rates rose by 4.3 percent, and home purchase prices followed with a 3.7 percent increase over the previous quarter. Home improvement products such as painting supplies and masonry materials experienced sharp increases due to the large number of second quarter sales for these items. Fuel and Other Utilities rose by 2.6 percent because of higher costs of refuse collection.

Apparel and Upkeep rose at a quarterly rate of 1.6 percent. Increases in the cost of clothing, especially women's and girls', were offset by a sharp decline in footwear (-11.6 percent). The annual percentage change of 0.4 percent for *Apparel and Upkeep* is negligible in comparison with the United States as a whole (7.4 percent), Chicago (7.7 percent), and Los Angeles-Long Beach (11.8 percent).

Transportation in the Phoenix area posted a 1.9 percent increase for the third quarter. Although down from the second quarter annualized increase of 19.4 percent, the annual *Transportation* rate for Phoenix (16.6 percent) is higher than the rates of the nation as a whole (15.1 percent), and the comparison cities of Chicago (16.1 percent), and Los Angeles-Long Beach (12.8 percent). Private Transportation increased 1.5 percent over last quarter, with rising automobile insurance and repair costs tempered by relatively stable new car and gasoline prices, and declining used car and automobile financing charges. Sharp increases in both airline and interzone bus fares pushed the Public Transportation rate up to 8.5 percent, the largest quarterly increase for any major item within the overall index.

Medical Care prices in the Phoenix area rose by 3.8 percent during the third quarter. Of the seven major

categories, *Medical Care* showed the highest quarterly increase due to sharp rises in hospital rooms and services and health insurance. This increase is larger than that posted by the nation as a whole (1.9 percent), Chicago (1.5 percent), or Los Angeles-Long Beach (0.9 percent). The annual rate of change of *Medical Care* in Phoenix (16.1 percent) is also higher than the United States (11.0 percent), and Chicago and Los Angeles-Long Beach (13.0 percent and 12.4 percent respectively). In 1980, Phoenix has been consistently higher in terms of annual percentage increases in the category of *Medical Care* than the rest of the country and the comparison cities.

Entertainment costs rose 2.3 percent during the third quarter. While this rise is higher than last quarter's increase of 0.6 percent, it is much lower than the 8.8 percentage jump of the first quarter, 1980. Higher costs for musical instruments and music lessons, pet and photography supplies, and higher admission fees to sporting events are responsible for this third quarter increase.

Other Goods and Services rose by 2.8 percent during the third quarter. This increase is larger than that for the United States (1.6 percent), Chicago (1.4 percent), or Los Angeles-Long Beach (0.5 percent). On an annual basis, however, the Phoenix area percentage rate of 7.0 percent is lower than the rest of the country (8.9 percent), Chicago (10.6 percent), and Los Angeles-Long Beach (9.4 percent). Third quarter increases were due mainly to higher costs of private elementary and high school tuitions, legal and funeral services, and (among Personal Care items) beauty parlor services.

(See table on opposite page for Complete Consumer Price Index for Metropolitan Phoenix with selected comparisons.)

METROPOLITAN PHOENIX CONSUMER PRICE INDEX
THIRD QUARTER, 1980
(1969 = 100)

Group	Second Quarter 1980 Index	Third Quarter 1980 Index	Percentage Change from Last Quarter	Percentage Change from One Year Ago
ALL ITEMS	222.6	228.4	2.6	15.9
Food and Beverages	217.0	224.2	3.3	11.3
Food	222.4	229.7	3.3	11.5
Food at Home	232.9	240.7	3.4	10.5
Cereal and Bakery Products	231.3	236.2	2.1	12.0
Meats, Poultry, Fish, and Eggs	218.7	227.5	4.0	5.4
Dairy Products	204.1	207.6	1.7	8.9
Fruits and Vegetables	209.6	225.9	7.7	12.2
Other Food at Home	228.4	234.1	2.5	14.6
Food Away From Home	192.3	198.1	3.1	13.2
Alcoholic Beverages	147.6	155.1	5.8	9.8
Housing	242.6	238.2	2.5	15.8
Shelter	230.5	237.4	3.0	18.2
Rent, residential	175.7	177.5	1.0	7.3
Homeownership	249.2	247.4	3.5	20.7
Fuel and Other Utilities	245.7	252.0	2.6	14.0
Household Furnishings and Operations	187.0	187.9	0.5	6.4
Apparel and Upkeep	170.2	172.9	1.6	0.4
Apparel Commodities	163.9	164.5	0.3	-2.0
Men's and Boys' Apparel	148.7	150.9	1.4	6.1
Women's and Girls' Apparel	157.1	163.1	3.8	-5.9
Footwear	215.8	190.7	-11.6	-10.0
Transportation	238.0	242.6	1.9	16.6
Private Transportation	237.3	240.9	1.5	15.9
Public Transportation	248.9	270.0	8.5	27.1
Medical Care	209.0	310.4	3.8	16.1
Entertainment	185.4	189.1	3.1	10.6
Other Goods and Services	213.4	218.4	2.3	7.0
Personal Care	210.3	216.1	2.8	10.2

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University

Group	United States		Chicago		LA Long Beach	
	Percentage Change From Last Quarter	Percentage Change From One Year Ago	Percentage Change From Last Quarter	Percentage Change From One Year Ago	Percentage Change From Last Quarter	Percentage Change From One Year Ago
ALL ITEMS	1.8	12.8	0.9	12.2	-0.7	13.7
Food	3.3	9.5	2.7	10.4	2.9	9.9
Food at Home	4.0	9.6	3.4	10.5	3.6	11.6
Food Away From Home	1.9	9.3	1.3	10.2	1.5	7.0
Housing	1.6	14.8	-0.04	12.0	-3.0	16.4
Shelter	1.1	16.2	-1.7	12.2	-4.9	17.1
Fuel & Utilities	4.0	16.0	7.8	14.8	10.9	29.3
Household Furnishings & Operations	1.5	8.4	1.1	9.1	0.2	7.1
Apparel and Upkeep	0.6	7.4	2.2	7.7	0.6	11.8
Transportation	1.5	15.1	0.2	16.1	0.6	12.8
Medical Care	1.9	11.0	1.5	13.0	0.9	12.4
Entertainment	2.0	9.4	2.0	11.0	3.4	9.7
Other Goods and Services	1.6	8.9	1.4	10.6	0.5	9.4

Source: Metropolitan Phoenix data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University; other data from U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

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Report to The Reader

Are we headed for another baby boom? Two Arizona State University faculty members think it is a possibility. In the article entitled "Birth Rate Trends: Implications for the Future," Dr. Stephen Happel and Dr. Timothy Hogan discuss the impact of small changes in average family size and explore several economic theories that explain the birth rate trends. Based on economic conditions, lifestyle changes, and natural cycles, the authors forecast a general increase both in total births and in the total fertility rate in the United States throughout the remainder of the twentieth century.

The second article, "Training and Development Talent in the Phoenix Metropolitan Area," reports the result of a survey of training professionals in the Phoenix area. The authors conclude that, "qualified professionals are available locally, and a national search may not be necessary to recruit people who can use effective techniques or teach important training skills."

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"Regional Prospects for the 80s and 90s" is the theme of the Southwest Regional Seminar of the National Association of Business Economists scheduled for February 20-21 at the Marriott Hotel in Tucson.

The seminar will consider national and regional economic trends, human resources and productivity, regional resources and the environment, capital needs and availability, and U.S.-Mexican economic relations.

Speakers will include Walter Hoadley (Bank of America), Professor Lester Thurow (M.I.T.), John Boatwright (Exxon), Kathy Eickhoff (Townsend-Greenspan & Co.), Larry Kimbell (U.C.L.A.), Irwin Stelzer (National Economic Research Associates), Jack Pfister (Salt River Project), and Robert J. Eggert (Eggert Economic Enterprises, Inc.).

The seminar is sponsored by the Arizona Economic Roundtable and the College of Business and Public Administration of the University of Arizona.

Registration fee, including dinner and two luncheons, is \$85. For details, contact:

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Birth Rate Trends: Implications for the Future

STEPHEN K. HAPPEL
TIMOTHY D. HOGAN

Population growth and the birth rate in particular, have been important in economic discussions since Thomas Malthus' provocative "Essay on the Principle of Population" in 1798.¹ However, today, with the low and relatively stable mortality in the industrialized world, economic demographers see the birth rate as the key for understanding population change and, consequently, the effects of demographic conditions in high income societies. They point out that current birth rates have an immediate impact through the types of goods and services purchased and female labor force decisions. They also point out that the ramifications of the current birth rate will be felt for decades to come as people grow older, enter into jobs and form households, and then retire.

For business managers, school officials, government planners, and other decision makers, knowledge of birth rate trends may be a vital element in their planning process. Corporations can improve decisions such as the

extent of the product line and where to locate production facilities. At the local level, construction firms can anticipate demands for housing and shopping centers, whereas school officials can utilize facilities more efficiently in the long run. In addition, government officials can plan for demands on parks and other public services, project changes in revenue, and can consider the future status of programs such as Social Security.

During the post-World War II baby boom, the United States birth rate rose unexpectedly and remained at a high plateau until the end of the 1950s. After 1960, however, the birth rate in America dropped sharply, and by the mid-1970s, had declined to historically low levels—substantially below the level necessary for long-run replacement of the population—an average of less than two children for each couple.

The purpose of this article is to review these population trends in Arizona and the United States, and to discuss projected birth rate trends in Arizona and the United States. In the first section, projections from the United States Census Bureau demonstrate how a small change in average completed family size can have a large impact on a society after only a few decades. In the second section, the Arizona birth rate is compared to that of the United States. In the last section several economic theories are presented that provide explanations for the trends. The statistics and theories are then used as a basis for speculation about the birth rate for the remainder of the century. In particular, this article considers the controversial issue of whether another

By the 1970s, the birth rate in Arizona and in the United States had declined to an average family size of less than two children. However, an upswing could occur during the remainder of the century with implications for business, government, and education.

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major upsurge in birth rate is likely to occur in the next five to ten years.

THE POTENTIAL IMPACT OF CHANGES IN TODAY'S BIRTH RATE

To illustrate the profound effects that changes in the birth rate can have upon a society, a variety of demographic statistics are drawn from three alternative projections of United States population. The projections, produced by the Census Bureau, were based on identical assumptions with respect to mortality and immigration. They differed only in their assumptions concerning future birth rates, expressed in terms of average completed family size:² Series I—2.7 children per woman; Series II—2.1 children; and Series III—1.7 children. Putting these family size assumptions into perspective, United States birth rate levels in the middle to late 1970s have been consistent with a completed family size of about 1.7 children. Thus, the Series III assumption implies that the future birth rate will remain at current low levels. The Series II projection is based upon an assumption that the United States birth rate will gradually rise to replacement level in which each couple will just be replacing itself by having two children (taking into account minimal levels of mortality). The long-run result would be zero population growth in the United States. Finally, the Series I projection implies the resurgence of the United States birth rate, which some demographers believe is a possibility within the next two decades.³ Table 1 presents information (based upon these three alternative population projections) concerning future trends in total population growth, growth of the school age population, and the relative proportion of the population that would be of retirement age in 1985, 1990, 1995, 2000, and 2025.

The statistics relating to growth of the total population show the impact of an increase in average family size of one child on the United States population after only twenty-two years. With a continuation of a current low birth rate, the total United States population would be expected to grow to almost 244 million by the year 2000, an increase of 11.6 percent, while the Series I projection implies a 29.4 percent increase to over 282 million by the end of the twentieth century. Further in the future, such differences would produce even more divergent results—the Series I population would be almost one and one-half times as large as that implied by the Series III projection (373 million versus 252 million) by the year 2025.

One example of the way in which differences in the

TABLE 1

DEMOGRAPHIC TRENDS ASSOCIATED WITH THREE ALTERNATE PROJECTIONS OF FUTURE POPULATION GROWTH IN THE UNITED STATES

	1978	1985	1990	1995	2000	2025
Total United States Population (millions)						
Series I		238.9	254.7	269.4	282.8	373.1
Series II	218.5	232.9	243.5	252.8	260.4	295.7
Series III		228.9	236.3	242.0	243.9	251.9
Percent Population Increase Since 1978						
Series I		9.3	16.6	25.3	29.4	70.8
Series II		6.6	11.4	15.7	19.2	35.3
Series III		4.8	8.1	10.8	11.6	15.3
Population in School Ages (5-17) (millions)						
Series I		45.4	51.4	60.6	64.4	85.7
Series II	48.0	45.5	45.3	49.6	51.1	53.0
Series III		42.1	41.3	42.5	42.7	36.7
Percentage of Total Population 65 Years and Over						
Series I		11.4	11.7	11.7	11.3	13.6
Series II	11.0	11.7	12.2	12.4	12.2	17.2
Series III		11.9	12.6	13.0	12.9	20.2

Note: Series I projections assume an average completed family size of 2.7 children per woman; Series II — 2.1 children; Series III — 1.7 children.

Source: 1978 population figures from the Bureau of the Census, 1979 *U.S. Statistical Abstract*; other figures computed from population forecasts in Bureau of the Census, *Current Population Reports*, Series P-25, No. 704 (July 1977), "Projections of the Population of the United States 1977-2050."

rate of population growth can have significant social and economic effects, can be seen in the portion of Table 1 relating to school age population. The Series I projection (2.7 children) implies that substantial growth in the school age population is projected. On the other hand, a continuation of the current birth rate (Series III—1.7 children) would result in a decline in the school age population. Such differences could, of course, have profound effects upon the demand for teachers, expenditures for school construction, not to mention textbooks, toys and games along with many other aspects of American society.

The birth rate also affects the age structure of the population. Although it may be surprising to some, the decline in the United States birth rate has been much more important than increased longevity as a cause of the growing burden of the Social Security system. The data in Table 1 on future trends in the proportion of elderly show that the birth rate is also a determinant of the future status of the Social Security system. If current levels were to persist indefinitely, the data show that the proportion of people age sixty-five and over will grow

from 11 percent to almost 13 percent by the year 2000, an increase of 17 percent, and that even a substantial resurgence of the birth rate (Series I) would merely keep the proportion from growing more than slightly over the next twenty years. The projected figures for the year 2025 demonstrate the vital nature of future birth rate trends. By that year, the proportion of the population sixty-five and over will almost double if current birth rates persist, producing a tremendous Social Security burden.

ARIZONA AND UNITED STATES BIRTH RATES: 1950-1979

Throughout the first half of this century, a long-term decline in the birth rate occurred in both Arizona and the nation. The average family size in the United States had dropped from about four children in the early 1900s to about 2.5 children in 1940. After World War II, the birth rate rose sharply—with average family size of about 3.5 children—and it remained at high levels for most of the 1950s. By 1960, however, the birth rate in both Arizona and the United States had begun to decline again, and by the 1970s, the birth rate in the state and in the nation had reached an average family size of less than two children.

Crude Birth Rates

To allow more detailed examination of these trends, Figure 1 traces the movement of the crude birth rate in Arizona and the United States from 1950 to 1979. The crude birth rate (CBR), which is the simplest and most commonly used birth rate figure, is computed by dividing the total number of live births in a given year by the midyear total population figure. Thus, it provides adjustment in birth statistics by variations in population size by expressing fertility in terms of a per capita measure. Traditionally, crude birth rates are expressed in terms of the number of births per 1,000 population, rather than births per person.

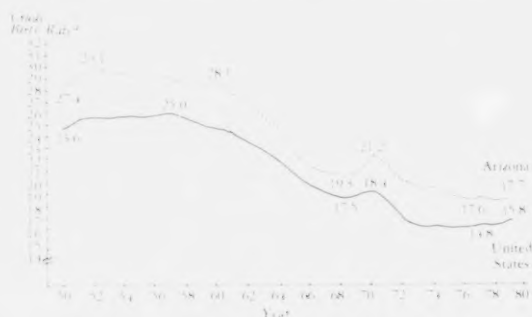
In Figure 1, it is evident that the two birth rate series have generally moved in very similar patterns. After relatively stable and high birth rates during the 1950s, both Arizona and United States birth rates declined substantially during the next decade, with a total decline of 31 percent in Arizona and 26 percent for the nation from 1960 to 1968—the year in which the lowest birth rate of the 1960s occurred. After small increases in 1969-1970, the decline resumed, and the downward trend bottomed out in the mid-1970s at crude birth rates

of approximately 17 to 18 per 1,000 population in Arizona and 15 births per 1,000 in the United States.

It is also evident that the birth rate patterns in Arizona have differed in some respects from the national patterns. Most importantly, birth rates in Arizona have been substantially higher throughout the 1950-1979 period. Similarly, the cyclical movements in the rates around the long-term trend are also more pronounced in the Arizona series compared with United States rates, as for example in the upturns in the Arizona crude birth rate in 1960, 1969-1970, and 1974.

FIGURE 1

CRUDE BIRTH RATES IN ARIZONA AND THE UNITED STATES, 1950-1979



^aExpressed in births per 1,000 population

Source: Arizona data from Arizona Department of Health Services, *Arizona Vital and Health Statistics*. United States data from U.S. Department of Health, Education and Welfare, *Vital Statistics of the United States, Volume 4—Natality, 1977* and *Monthly Vital Statistics Report*, various issues.

Total Fertility Rates

Although the crude birth rate is the most widely used measure, it has two drawbacks that make its use undesirable for precise analysis of birth rate trends. First, the crude birth rate's denominator is total population, even though only women in the child-bearing ages are the actual population who can be affected. Thus, computed birth rates could vary substantially because of differences in age and sex structures of the total population, even though the number of births occurring to each woman of child-bearing age were exactly the same. Second, the crude birth rate is not easily converted to a scale that allows comparison in terms of equivalent average family size. Because of such shortcomings, demographers have developed more sophisticated measures. The most popular of these refined measures is

the total fertility rate (TFR), which by its construction, corrects for both of the disadvantages of the crude birth rate mentioned above.

The *total fertility rate* is defined as the completed number of children a woman would have if she were subject to the present fertility rates at each specific age between fifteen and forty-four. Thus it is defined for women in childbearing ages, and it eliminates age structure effects by weighting each age-specific rate the same. The TFR measures the fertility of women of childbearing age during a given year, whereas the completed fertility rate measures the actual number of children born to women during the entire childbearing period.

Figure II shows the comparison between the TFR in Arizona and the United States since 1960; the findings are much the same as the evidence provided by the crude birth rate in Figure I. The two rates generally move in concert, but the upturns in the Arizona TFR are stronger than corresponding United States increases. Also, the Arizona rate is somewhat more volatile since 1973 and most importantly, the Arizona TFR is greater than the

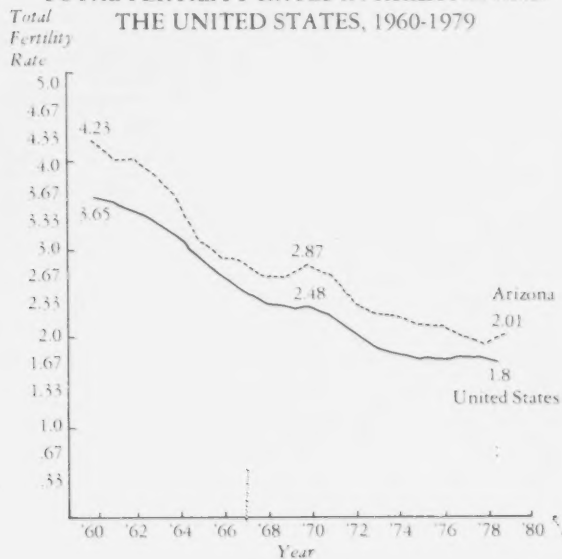
United States rate for every year listed. Thus, one might conclude that the desire for children has indeed been stronger in Arizona than the United States as a whole.

Total Births

While relatively similar patterns of declining birth rates are found when comparisons are made between birth rates for Arizona and the United States, the trends in the annual number of births have been much different. Figure III presents the time series of total number of live births in each year for both the state and the nation over the 1950-1979 period. The number of births in the United States rose substantially during the 1950s, reaching a peak of about 425,000 per year during the 1957-1961 period. After 1961, a long and sharp decline in the births occurred with total number of births finally falling more than 25 percent to slightly more than 300,000 in the 1973-1976 period. Since 1976, the aggregate number of births in the United States has begun to increase once more due primarily to increases in the number of women in the child bearing age in the United States population.

FIGURE II

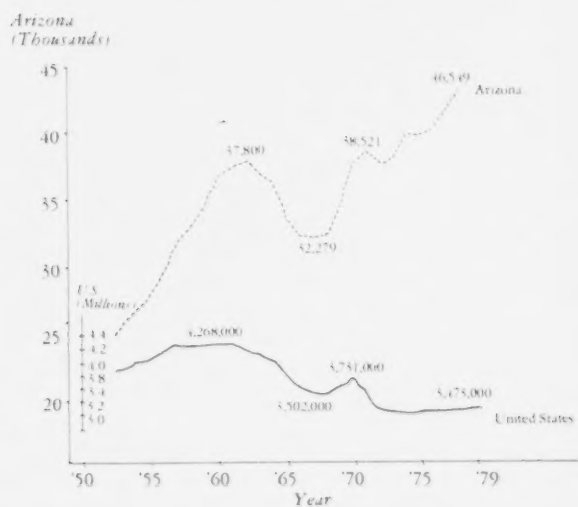
TOTAL FERTILITY RATES IN ARIZONA AND THE UNITED STATES, 1960-1979



Source: Arizona rates estimated by the authors from age-specific birth data in annual issues of U.S. Department of Health, Education and Welfare, *Vital Statistics of the United States, Volume I — Natality*; and Arizona Department of Health Services sources and age-specific female population figures from the U.S. Census of Population 1960 and 1970 and annual issues of *Population Estimates of Arizona*; United States rates compiled from various issues of *Vital Statistics, Volume I Natality and Monthly Vital Statistics Report*.

FIGURE III

TOTAL LIVE BIRTHS IN ARIZONA AND THE UNITED STATES, 1950-1979



Source: Arizona data from Arizona Department of Health Services, *Arizona Vital and Health Statistics*. United States data from U.S. Department of Health, Education and Welfare, *Vital Statistics of the United States, Volume I — Natality*, 1977 and *Monthly Vital Statistics Report*, various issues.

Figure III shows that the overall trend in the number of births in Arizona has been much different than in the United States during the 1950-1979 period. Due to the tremendous volume of migration into the state since World War II, the annual number of births in Arizona has grown from 20,500 in 1950 to 46,500 in 1979, even as the birth rate has declined from 27.4 to 17.7 births per 1,000 population.

Looking at the cyclical patterns in total births, the movements seen in the Arizona series are much more pronounced, with a sharp drop in the early 1960s, followed by an equally sharp increase in the later years of the decade. Downturns in the overall upward trend are also associated with the recession periods of 1971 and 1975. Similar patterns also exist in the United States time series but are more difficult to discern in the relatively more stable national total birth figures.

EXPLANATIONS

Popular explanations for the general pattern of Arizona and United States birth rates over the past thirty years include the changing roles of women, the emergence of the "me" generation, the development of more effective contraception, increased education, and delayed marriage with associated changes in cohabitational arrangements. In addition, economic demographers have sought a more complete understanding of the complex forces at work by supplementing standard methodology with economic analysis. Two viewpoints currently dominate economic discussions of the birth rate: the micro view of the Chicago-Columbia approach, and the macro view of Easterlin. These perspectives are reviewed in order to highlight and interpret the major factors in the present United States birth rates and to draw conclusions about the direction of the Arizona birth rate until the end of the century.

The Chicago-Columbia Approach

The Chicago-Columbia approach, founded by University of Chicago economist Gary Becker,⁴ applied household demand theory to completed family size decisions in developed countries. Children are analyzed as if they were a consumer durable good, and the basic reason for the declining birth rate in the United States is that the cost of children relative to other goods has increased substantially during the last twenty years. Three contemporary themes underlie the reasoning:

The first relates to the effectiveness of contraceptives. With the introduction of the contraceptive pill in the

late 1950s, children became more subject to planning and choice, that is, more of a demand than an unchecked supply phenomenon. As a result, people are more cost conscious, and unwanted births are far less prevalent.

The second theme is the women's movement. Chicago-Columbia economists argue that the correct price for children is a full price. This full price consists of a market goods component (food, clothing, toys, etc.) and a time component (caring, teaching, etc.). Children are assumed to be time intensive, particularly with respect to the woman's time. As women move into labor markets, the opportunity cost of their time goes up, and the full cost of a child escalates. In other words, households are less willing to forego vacations, cars, or other items that compete with children because children take up too much valuable time.

The third theme in this cost-conscious approach is the desire for quality over quantity. Both the quantity and quality of children are assumed to be positively related to income. However, Chicago-Columbia economists believe that the demand for child quality (piano lessons, special tutoring, camps, etc.) goes up more rapidly than the demand for actual number of children as household income increases. Therefore, as income goes up, households theoretically want more children and more quality, but they want quality so strongly that they have fewer children because of large quality expenditures on the first offspring.

Most Chicago-Columbia economists today are predicting low birth rates into the near future. Perhaps the best known extension of Chicago-Columbia reasoning into the future is the countercyclical model of Butz and Ward.⁵ They argue that birth rates are low in the United States at the moment because of effective contraception and the desire of women to work. Moreover, they anticipate improving economic conditions during the mid-1980s which will drive birth rates even lower. Better conditions will lead to more women entering the work force,⁶ thereby increasing the full cost of children.

The Easterlin Hypothesis

Richard Easterlin and his followers disagree with the Butz and Ward model and instead predict a "baby boom" in the United States, starting in the mid-1980s. This belief is based on a theory that combines Keynesian economics, the aging of birth cohorts (all persons born during a given year, as in the 1940 birth cohort meaning all persons born in 1940), the economics of marriage and labor force behavior, and the notion of *relative* income.⁷

The Easterlin hypothesis focuses on two basic groups of workers: the young, unskilled or semi-skilled workers

under thirty, many of whom are new entrants into labor markets; and the over-thirty group, many of whom (especially males) have settled into permanent, well-paying positions. In making career, marriage, and family size decisions, the younger workers are assumed to be strongly influenced by their current economic position relative to expectations from childhood.

Specifically, if younger workers feel better off than their parents at the same stage in the life cycle, their relative income is high. Consequently, they are more likely to marry at earlier ages and have more children than their parents. On the other hand, if young workers feel worse off, and their relative income is low, they delay or postpone marriage and births.

According to Easterlin, the major determinant of relative income in the United States since the 1930s has been the comparative size of birth cohorts. Before that time, investment booms and busts dominated American business cycles. Yet the booms did not lead to substantial increases in real wages for households because open immigration caused the work force to swell whenever the demand for labor increased, so relative income remained within rather narrow limits.

Then the situation began to change in the 1930s due to the post-World War I immigration quotas and the Keynesian revolution. The United States labor supply became far less elastic in the short run while aggregate demand became far more stable. For the small number of people born in the 1930s, this meant abundant job opportunities as they began to enter labor markets in the late 1940s and 1950s. The result was high relative income for young workers, leading to early marriage, single breadwinners within households, and an increased demand for larger families through the early 1960s.

However, once again the situation changed. The relative income of young workers began to decline in the 1960s as the people born during the baby boom of the late 1940s started to seek employment. Their large numbers caused a tightening of job opportunities, giving rise to delayed marriage, smaller completed parity per household, and a greater percentage of working women.⁸

Assuming the basic parameters remain the same, another upswing in births beginning in the mid-1980s can be readily forecasted. At that time, the birth-death group of the 1960s will start to enter labor markets. Facing this small supply of young workers is likely to be high aggregate demand—the baby boom individuals will be at their peak earning years and federal spending will likely remain high. Relative incomes therefore will rise once again, and the average number of children per household will increase accordingly.⁹ If the Easterlin

hypothesis is correct, this boom will last approximately two decades, and then another swing will occur.

Key Issues in Future Birth Rates

Given the high degree of contraceptive effectiveness and the fact that smaller numbers of young workers will enter job markets in the mid-1980s, several factors hold the key to the United States birth rate in the 1980s and 1990s:

The first factor is the state of the economy. Although economic conditions have been turbulent throughout the 1970s, there seems to be a general feeling within United States society that the new political administration will be more successful in fostering more favorable conditions for the United States economy during the 1980s.

A second factor relates to female work arrangements. If a baby boom is to occur, more women will have to withdraw from the labor force, at least temporarily. With recent changes in most employers' maternity leave policies, many women now have the opportunity to take a leave of absence without loss of position. Such temporary withdrawals from the labor force do not now have severe negative impacts upon women's careers as once was the case. Easterlin further asserts that a higher proportion of young women will choose to remain in the home rather than join the labor force as the relative economic circumstances of young households improve during the next decade.

It is also likely that the restructuring of household roles will be necessary if larger families are to occur in a society in which working wives are a predominant feature. In particular, the fathers in such families will have to take a larger role in the raising of children.

An additional factor relates to living arrangements and marriage plans among the young. The increase in total births in the United States since 1976 is most likely due to children born to women in their late twenties and early thirties who had previously postponed childbearing. Thus, the birth rate among this group is comparatively high at present. This means that young women, especially those between twenty and twenty-four, are the crucial group in determining whether a boom gets underway. At the moment their behavior would seem to indicate no sudden surge in births. For example, in 1960, 29 percent of women between twenty and twenty-four had never married, whereas by 1978 the proportion had risen to almost 48 percent.¹⁰ In addition, the divorce rate is at an all-time high. Perhaps as many as 50 percent of all marriages will end in divorce over the next decade if present trends continue.

Some analysts have pointed to the growing practice of unmarried men and women living together as a deterrent to a possible increase in the birth rate. While it is true that such arrangements are less likely to result in births, this group constituted only 3 percent of the estimated 96.5 million married men and women living with a spouse in 1979.¹¹

THE FUTURE

Since Arizona birth rates tend to move in conjunction with United States rates, as shown in Figures I and II, projections begin with some opinions about the United States as a whole.¹² In general, we feel the evidence seems to favor the Easterlin position over the Butz and Ward viewpoint. We are in agreement that the size of the group as they begin to enter labor markets, has a critical impact on their perceived well-being. So, like Easterlin, young workers in the mid-1980s can be expected to feel better off economically than their parents simply because of their smaller numbers.

In addition, although we cannot predict the future, it is our belief that economic conditions will generally improve in the 1980s in response to a number of factors, including changes in economic policies under the new administration to foster investment and increased productivity, restraint in monetary policy actions which will lead to a more stable economy, and demographic changes in the labor force that will also tend to improve productivity and reduce unemployment. With generally improved economic conditions and specifically with improved labor market conditions for the relatively smaller numbers of young workers, increased marriage and birth rates (especially for the twenty to twenty-four year age group), seem likely during the 1980s.

Also, while a massive movement of women back into the home is unlikely, the authors foresee a return to a greater family orientation as the "me" generation winds down. In the process, traditional male and female roles will probably be redefined and men will be more actively involved in child care. Finally, an upsurge in births seems likely in light of the natural cycles that characterize the birth rate in most of the human population.

History has constantly demonstrated that swings in the birth rate are the norm rather than the exception. Therefore, we forecast a general increase in both total births and the total fertility rate in the United States through the remainder of the twentieth century. The estimated total rate most likely is 2.1 to 2.2—in other words, replacement birth rate or slightly above. On the other hand, substantially higher figures such as 2.7 are a

possibility. Upturns have a way of turning into outright booms as forces interact and socioeconomic conditions change.

As demonstrated by the statistics presented in the second section of the article, such a rise in fertility would have important effects upon United States society as the number of births rises from the 1979 level of 3.5 million to the 4 million births per year during the 1980s and the 3.8 million to 3.9 million births level during the 1990s. On the other hand, a pattern of decline to 3.3 million births in the 1980s and less than 3 million births per year by the year 2000 if current low fertility levels persist until the end of the century would see far different effects.

Because of continued rapid growth in the population of child-bearing ages in the state due to in-migration, the total number of births (and therefore the number of children) in Arizona will rise substantially even if low birth rate levels continue. Extrapolation of the current fertility rates through the remainder of the century would imply that the annual number of births would fall in the 45,000 to 50,000 range during the 1980s, and between the 50,000 to 60,000 range during the 1990s. If, on the other hand, the total fertility rate rose to the 2.1 children figure (consistent with the Series III projections for the nation), the projected number of births would be over 51,000 in 1985, about 58,000 by 1990, and over 70,000 by the year 2000.

This analysis has previously demonstrated that Arizona fertility has been consistently higher than for the entire nation and that upturns have generally been more pronounced when they occur. If the Arizona economy continues to be growth-oriented, and the state's society remains more conservative and family-oriented than that of the United States as a whole, it is also likely that fertility levels in Arizona will remain above the national average. Assuming, for example, a total fertility rate of 2.7 children per woman (consistent with the Series I United States projections), the annual number of births could exceed 60,000 by 1985, 70,000 by 1990, and reach over 85,000 by the year 2000.

To the extent that such an upswing in births occurs during the 1980s in Arizona, and to a lesser extent in the United States as a whole, business people, governmental officials and the public in general should be prepared for the consequences. Some of the recent shifts in product planning and markets will need to be modified—there will be more young households with young children rather than the freer unmarrieds and childless couples. Such households with young children will be buying more baby food, toys, and other child-oriented products

and spending less on such items as travel and two-person sports cars. To the extent possible, given the high cost of housing, it might be expected that the demand for homes with larger numbers of bedrooms would increase to accommodate families with two (or maybe even three) children rather than childless or one-child families.

Similarly, to the extent that births increase, governmental officials will have fewer worries about declining school enrollments; and, in growing areas, school officials may have to worry about how to handle larger and larger numbers of children in the 1980s. In general, planners

will have to pay more attention to youth-oriented concerns than would be the case if the birth rate remains at the low level of the 1970s.

If a substantial increase in the birth rate occurs during the 1980s, it will largely be a result of the interaction of demographic and economic factors emphasized by Easterlin's analysis. Just as the small birth cohorts of the 1930s produced the post-World War II baby boom, the smaller birth cohorts born during the period of fertility decline in the 1960s will in turn produce a smaller version of a baby boom in the 1980s, thus continuing the cyclical pattern of birth rates.

¹Thomas Malthus, *An Essay on the Principle of Population*, 1798.

²Completed family size is defined as the average number of children a cohort of women starting at fifteen would bear by age forty-four.

³R. A. Easterlin, M. Wachter, and S. Wachter, "The Coming Upswing in Fertility," *American Demographics* (February 1979), pp. 12-15.

⁴Gary Becker, "An Economic Analysis of Fertility," in *Demographic Economic Change in Developed Countries*, Universities-National Bureau Conference Series II, (Princeton, NJ: Princeton University Press, 1960); "A Theory of the Allocation of Time," *Economic Journal* 75 (September 1965): pp. 493-517; "A Theory of Social Interactions," *Journal of Political Economy* 82 (November/December 1974): pp. 1063-1094; Becker, and H. Gregg Lewis, "On the Interaction Between the Quantity Quality of Children," *Journal of Political Economy* 81, supplement (March/April 1973): pp. S279-288; and Becker and Nigel Tomes, "Child Endowments and the Quantity and Quality of Children," *Journal of Political Economy* 84, supplement (August 1976): pp. S143-162.

⁵William Butz and Michael Ward, "The Emergence of Counter-cyclical U.S. Fertility," *American Economic Review* 69 (June 1979): pp. 318-328; and "Baby Boom and Baby Bust: A New View," *American Demographics* (September 1979): pp. 11-17.

⁶As an indication of the willingness of women to work, between 1960 and 1977 in the U.S., the proportion of women in childbearing

years who are employed increased from less than two-fifths to about three-fifths. Indeed, the forecasting firm of Donaldson, Lufkin, and Jenerette predicts that between now and 1990, 65 percent of all new jobs created will be taken by women, so that they will account for 45 percent of the job holders compared to the current 38 percent. For more arguments along these lines, see "The Hot Branch of Economics," *Dun's Review* (May 1979): pp. 50-57.

⁷Although the ideas are found throughout Easterlin's research since the early sixties, the most complete statement is in his presidential address to the Population Association in 1978, "What Will 1984 Be Like? Implications of Recent Twists in Age Structure," reprinted in *Demography* 15 (November 1978): pp. 397-432.

⁸In fact, Easterlin argues that the woman's movement was caused by the economic conditions of the 1960s.

⁹As pointed out earlier, Easterlin and his colleagues have projected a TFR of 2.7 for the boom.

¹⁰Charles Westoff, "Marriage and Fertility in Developed Countries," *Scientific American* 239 (December 1978): p. 54.

¹¹U.S. Bureau of the Census, "Marital Status and Living Arrangements: March, 1979," *Current Population Reports*, Series P-20, No. 349 (February 1980).

¹²These conclusions are the opinions of the authors based on their analysis of factors discussed earlier in the article.

Training and Development in the Phoenix Area

RONALD W. CLEMENT
C. EDWARD KUR

Training people at work is big business. In fact, one training expert has estimated that in 1979, American business spent approximately \$100 billion on training.¹ Most major corporations have at least one training specialist, and many companies employ several professional training and development people. As an example of the rapid growth in this field, Figure 1 shows the membership growth in the American Society for Training and Development (ASTD), the largest organization of training professionals in the world. Clearly, the training field is growing as organizations use more complex technology to create goods and services for a rapidly changing society.

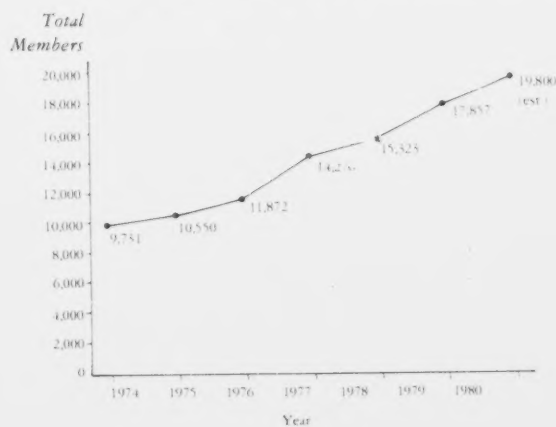
Certainly work place training, as distinguished from degree programs and other school-related forms of post-secondary education, has also been growing in importance in the Phoenix metropolitan area. For example, enrollment for programs offered by the Center for Executive Development in the College of Business Administration at Arizona State University has grown from 3,348 in 1969-1970 to 10,574 in 1979-1980.²

Training professionals in the Phoenix area are confident of their ability to use many of the most effective training methods. In addition, they also feel prepared to teach courses in most topic areas.

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This article presents the results of a survey of training professionals in the Phoenix metropolitan area. The purposes of this study were to identify the training techniques which Phoenix-area training professionals view themselves as most able to use; to determine these trainers' perceived skill levels in teaching a variety of topics that are frequent subjects in many organizational training programs; and to identify techniques and topics

FIGURE 1
MEMBERSHIP IN THE AMERICAN SOCIETY
FOR TRAINING AND DEVELOPMENT



Source: American Society for Training and Development.

in which local training professionals need to increase their skills.

The results of this study can be useful in several ways. First, managers who are hiring training specialists may use the data presented as a frame of reference for evaluating the technical skills of candidates. Second, the data may help such managers decide whether qualified people are available locally or whether a national search is necessary. Third, managers may use these data to evaluate the organization's present training staff and to plan for the professional development of training staff members. Finally, program planners in Phoenix area training associations can refer to this study to help plan needed programs for their members.

SCOPE OF THE STUDY

Questionnaires were sent to the 264 members of the Valley of the Sun Chapter of ASTD.⁴ These individuals were assumed to be representative of training professionals in the Phoenix metropolitan area. Ninety completed surveys were returned for a response rate of 37.9 percent.

The survey asked the respondents to rate their ability to use each of twenty training techniques and also their ability to teach each of twenty training topics. The techniques on the list are commonly used throughout the training field; the topics have frequently been offered in courses throughout the country, and their selection was based upon a review of course brochures. People rated their own skills using a scale ranging from 1 ("not well at all") to 7 ("very well").

Two general categories of techniques were covered in the survey. One category consisted of fourteen techniques based primarily upon interpersonal action between trainees and an instructor, supervisor, or peer; in situations where the trainee is instructed by a supervisor or peer (i.e., coaching, job instruction training, job rotation, and apprenticeships), a training department is normally responsible for the design and implementation of the program. The second category of techniques involves the use of six audio-visual devices. The techniques within each category are briefly described below.

TECHNIQUES STUDIED

Interpersonal Techniques

Lecture. This is among the oldest and most widely used method of instruction. In the lecture method a speaker or trainer transmits information to listeners.

The transmission is basically in one direction: from speakers to relatively passive listeners.

Roleplaying. In this technique, participants pretend they are involved in a well-defined situation, and they spontaneously interact as if the situation were real.⁴ For example, trainees might act out a discussion between an angry employee and a supervisor as a basis for learning how to deal with anger.

Case Study. In this approach, groups of trainees analyze and discuss a written or filmed description of organizational problems similar to those they face on the job.

Coaching. This is a process of one-to-one interaction, typically between a supervisor and a subordinate, in which the supervisor helps the subordinate acquire and apply new skills, knowledge or attitudes.⁵ The technique is an important one for training professionals to know because they are often expected to teach the supervisor how to be an effective coach.

Job Instruction Training. This on-the-job instructional program is intended to teach the specific skills and behaviors required for a specific job or task. Generally, trainees are taught by their supervisors or by working side by side with more experienced employees, who in turn are usually taught how to use the technique by members of the training department.⁶

Teambuilding. This method is generally classified as an organization development method as well as a training technique. In teambuilding, a work group does research on its own technical and interpersonal processes, often with the help of a training professional in the role of consultant or facilitator. As the group members study the research data together, they develop and experiment with more effective methods of working together.⁷

Behavior Modeling. This technique requires that trainees study films or tapes of people who perform a particular task properly. The trainees then practice or rehearse doing the task the way it was shown. Trainers provide constructive feedback and support.⁸

Programmed Instruction and Computer-Assisted Instruction. In programmed instruction (PI), the training materials — usually books or decks of cards — are the "instructor" which teach and test the students in the absence of a human trainer. For instance, if the trainee answers a test question incorrectly, he or she is told what page or card to refer to for remedial instruction. Computer-assisted instruction (CAI) is a form of programmed instruction in which the trainee interacts with a preprogrammed computer instead of a book or cards. Trainees receive immediate feedback and set the pace of their own training.

Business Games. A business game simulates the operation of a complex business organization over a fixed period of time, with trainees assuming the roles of the organization's top managers. By means of feedback each month, quarter, or year on the outcomes of their decisions, the trainees learn general management skills.

Sensitivity Training. This technique has been widely used to help managers increase their awareness of their own emotional impact on others as well as others' impact on them. In sensitivity training, a small group of strangers work together for up to two weeks in an unstructured, agenda-free setting to learn to become more interpersonally effective.⁹

In-Basket. This technique is used to simulate the administrative aspects of a managerial job. Trainees are required to read and respond to a large number of letters, proposals and memoranda in an in-basket. The technique is frequently used to *measure* various skill levels as well as to *teach* the skills.

Job Rotation. Here the trainees are moved among a series of jobs or tasks in order to broaden their knowledge of the organization.

Apprenticeships. These are planned or structured programs in which the trainee works on the job under the guidance of more experienced people. This activity is supplemented with classroom training related to the job. In unionized industries, apprenticeship programs tend to be sponsored jointly by the union and management.

Audio-visual Techniques

Overhead Projection. This technique requires that visual aids be prepared prior to the training session. The aids are 8½ by 11 inch photographic or xerographic "slides" with images that are projected onto a screen by a projector.

Films and Videotape. Motion pictures are widely used by training professionals. Generally, films are produced by studios and sold or rented to trainers. Videotape, on the other hand, has enabled trainers to produce their own personalized programs. Furthermore, videotape or instructional television (ITV) makes it possible for people to perform a job function and then immediately watch themselves on a television monitor.

Slides and Filmstrips. Photographic slides and strips can be used in conjunction with other techniques to convey ideas visually. Often, several slide projectors are synchronized with one another and with an audio tape recorder to convey dramatic multi-image, multi-sensory messages.

Opaque Projection. This technique is similar to overhead or transparency projection except that any

written, drawn, or typed material can be projected without first making transparent photographic or xerographic slides.

RESULTS OF THE SURVEY

Table 1 shows how respondents rated their own ability *to use* each of the twenty training techniques. They view themselves as most able to use lectures and overhead projection. Roleplaying and case study, which require a high level of trainee involvement, were ranked third and fourth, respectively. The two techniques in which the supervisor often plays the role of instructor — coaching and job-instruction training — were ranked fifth and sixth.

Respondents viewed themselves as least skilled in using computer-assisted instruction. Apprenticeships and job rotation were ranked next lowest. Slightly higher ratings were given to in-basket, opaque projection, and sensitivity training.

Table 2 shows how respondents rated their own ability *to teach* each of twenty training topics. Phoenix area training professionals say they are most capable of teaching motivation followed by several topics related to communication: effective listening, giving and receiving feedback, effective speaking, and conducting meetings. Numerous studies show that much of managers' time is spent on tasks associated with these topics.¹⁰ Also, Phoenix area trainers view themselves as capable of teaching problem-solving skills.

On only two topics did respondents rate their teaching capability below the neutral point (4 on a scale of 1 to 7): office management (3.0) and selling (3.1). Four other topics were rated very near the neutral point, indicating only an average capability in teaching these topics. Yet each of the four — controlling, staffing, directing, and management by objectives — is treated as an important aspect of management by the majority of writers of management texts.

CONCLUSIONS AND IMPLICATIONS

An encouraging finding is that Phoenix area training professionals consider themselves most competent in the use of some of the most effective techniques in the field of training. For instance, according to research, the lecture technique, *when used by skilled speakers*, is quite effective in transmitting knowledge and is favorably received by program participants.¹¹ Both lecture and overhead projection are often used because they tend to be economical and are easily adapted to training settings.

TABLE 1
TRAINERS' PERCEIVED ABILITY
TO USE TWENTY TRAINING TECHNIQUES

Training technique	Can use "not well at all"			Can use "very well"			Mean response	Standard deviation
	1	2	3	4	5	6		
Lecture							5.3	1.5
Overhead projection							5.3	1.5
Roleplaying							5.0	1.7
Case study							4.9	1.4
Coaching							4.8	1.7
Job instruction training							4.8	1.7
Slides							4.7	1.7
Teambuilding							4.7	1.7
Films							4.5	1.9
Videotape							4.3	2.1
Behavior modeling							4.2	1.9
Programmed instruction							4.0	1.7
Business games							3.9	1.6
Filmstrips							3.9	1.8
Sensitivity training							3.8	2.0
Opaque projection							3.8	1.5
In-basket							3.6	1.8
Job rotation							3.5	1.7
Apprenticeships							3.0	1.7
Computer-assisted instruction							2.2	1.6

Source: Survey Conducted by the authors.

TABLE 2
TRAINERS' PERCEIVED ABILITY
TO TEACH TWENTY TRAINING TOPICS

Training topic	Can Teach "not well at all"			Can Teach "very well"			Mean response	Standard deviation	
	1	2	3	4	5	6			7
Motivating								5.3	1.8
Effective listening								5.2	1.6
Giving and receiving feedback								5.1	1.6
Effective speaking								5.0	1.6
Conducting meetings								5.0	1.7
Problem-solving								5.0	1.7
Time management								4.9	1.6
Performance appraisal								4.9	1.8
Planning								4.9	1.8
Organizing								4.7	1.8
Decision-making								4.7	1.8
Selection interviewing								4.6	1.8
Handling stress								4.6	1.7
Effective writing								4.5	1.6
Management by objectives								4.4	1.7
Directing								4.4	1.7
Staffing								4.3	1.8
Controlling								4.2	1.7
Selling								3.1	2.1
Office management								3.0	1.6

Source: Survey conducted by the authors.

Roleplaying and case studies, among the higher-ranked techniques, are both effective in teaching problem-solving skills and in changing attitudes. Both of these techniques tend to be favorably received by participants in training programs.¹²

Perhaps the primary strength of coaching and job instruction training is that they involve the immediate supervisor in the training process. The result often is an improved relationship between the supervisor and the trainee and a better chance that the learning will be used in the job setting.

A number of explanations exist for the low level of skill reported by Phoenix area trainers in using several of the techniques. For example, the cost of developing software for computer-assisted instruction is high. Furthermore, few trainers have the skills to do the programming themselves, and some people prefer to be instructed by a person rather than by a machine.¹³

It is possible that local trainers are not skilled in designing and conducting apprenticeship and job rotation training programs because of the expense of these programs. Furthermore, developing apprenticeship programs often requires cutting through the red tape and politics that separate labor from management. Job rotation training requires resolving the interdepartmental rivalries that plague many organizations. In other words, the costs of such programs are high.

The low level of skill associated with in-basket training can be attributed to the fact that the technique is more likely to be used by personnel analysts as a selection tool than by trainers as a training technique.

The opaque projector is a cumbersome device that offers few advantages over the lighter-weight transparency projector. Although opaque projection does not require preparation of transparencies, any company with a copying machine can produce its own transparencies inexpensively. Furthermore, moving from one visual aid to the next is much quicker with transparency projection, and a trainer using properly designed transparencies can build a visual story by adding transparencies

during a presentation with each component filling in the visual image on the screen.

It is not known why Phoenix area trainers do not feel better skilled in the use of sensitivity training. Perhaps the controversy generated by this technique is responsible for its infrequent use in the Valley. This controversy centers on two concerns. First, some critics have charged that sensitivity training produces anxiety and is disruptive to the psychological health of some participants. Second, the training has sometimes been conducted by unqualified facilitators. Regardless, research shows this technique to be useful in changing attitudes and developing interpersonal and problem-solving skills.¹⁴

Overall, local training professionals are confident in the use of many of the most effective training methods. In addition, they feel well-prepared to teach courses in most topic areas covered by this survey. For all but two of the topics — selling and office management — a considerable number of skilled instructors are available. The supply of qualified professionals appears to be greatest for training programs covering motivation of employees and communication skills.

Three conclusions can be drawn from this study. First, knowledgeable training professionals apparently are available locally, and a national search may not be necessary to recruit people who can use effective techniques or teach training and development topics. This holds true whether one is seeking to develop an in-house training staff or to hire a local consultant.

Second, it is probably realistic to expect one's training staff to be skilled in using several training techniques and in teaching a broad range of topics. Training managers might wish to examine the qualifications of their own staffs to determine where further skill development is needed. Clearly, professional help is available locally to provide for this development.

Third, program planners in the various professional training associations should note techniques in which local trainers feel less confident. Train-the-trainer workshops in these techniques would be worthwhile.

¹²Jerome J. Peloquin, "Training: The Key to Productivity (Or: How We Can Save the World for Capitalism)," *Training and Development Journal*, February, 1980, pp. 49-52.

¹³These data were provided by the Center for Executive Development.

¹⁴The study upon which this article is based was funded by the Valley of the Sun Chapter of the American Society for Training and Development.

¹⁵Joseph L. Moreno (Ed.), *Group Psychotherapy* (Beacon House: Beacon, N.Y., 1945).

¹⁶Herbert J. Chudren and Arthur W. Sherman, *Personnel Management* (South-Western: Cincinnati, Ohio, 1980).

¹⁷Bird McCord, "Job Instruction," In Robert L. Craig (Ed.), *Training and Development Handbook* (McGraw-Hill: New York, 1976).

¹⁸Wendell L. French and Cecil H. Bell, Jr., *Organization Development* (Prentice-Hall: Englewood Cliffs, New Jersey, 1978).

¹⁹A. Goldstein and M. Sorcher, *Changing Supervisory Behavior* (Pergamon: New York, 1974).

²⁰French and Bell, *Ibid.*, p. 143.

²¹Don Hellriegel and John W. Slocum, Jr., *Organizational Behavior* (West Publishing: St. Paul, Minn., 1979).

²²Charles E. Watson, *Management Development Through Training* (Addison-Wesley: Reading, Mass., 1979).

²³*Ibid.*, p. 214.

²⁴I. L. Goldstein, *Training: Program Development and Evaluation* (Brooks-Cole: Monterey, CA., 1974).

²⁵Watson, p. 214.

Phoenix Retired Couple's Budget — 1979

ROBERT T. KEIM
CAROL ZIMMERMAN

To maintain a moderate standard of living, a hypothetical Phoenix area retired couple required \$9,783 in 1979. This figure reflects an increase of 10.4 percent over the 1978 figure for the metropolitan area. These figures are the result of a study conducted by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University.¹ The budget, which is based upon consumption patterns determined by the United States Bureau of Labor Statistics (BLS), is directly priced during the fourth quarter each year.

The retired couple consists of a husband age 65 or over and his nonworking wife. They are self-supporting and live as a separate household in the Phoenix metropolitan area. The couple is assumed to possess an average inventory of clothing and household goods and considered to be in reasonably good health with Medicare providing for most of their medical needs. Sixty-five percent of the couples own their home mortgage-free, with the remaining 35 percent renting.

The Phoenix Retired Couple's Budget Study is based on methodology developed by the Bureau of Labor Statistics and described in Bulletins 1570-4 and 1570-6. The contents of the budget, the item specifications, and allowed quantities of each item were set by the BLS in

consumer expenditure surveys that determined which goods and services families were actually purchasing at the time of their survey, which was 1965. It provided for a lifestyle described as "an intermediate level of living" for a retired couple in the Phoenix metropolitan area. However, since the BLS has not changed specifications, items still reflect mid-1960s consumption patterns.

It must be emphasized that the budget does not report the *average* annual expenditure of households, but rather only the amount of income required to purchase a predefined basket of goods held constant over time.

This budget study does have considerable consistency. In the Phoenix metropolitan area, nearly identical goods have been priced each year. Changes in the year-to-year costs are almost entirely due to changes in prices of the goods and services included rather than to alterations in the budget composition.

Phoenix is not one of the cities on which the BLS keeps Retired Couples data. Since 1969, the Bureau of Business and Economic Research has utilized the BLS-developed methodology to report the budget figures for a hypothetical Phoenix retired couple at the intermediate level. These data are collected by direct pricing of the specified consumer goods and services. On the other hand, BLS studies for other cities merely update their 1969 direct prices by components of the Consumer Price Index. Because of this difference in methodology, these figures *cannot* be accurately compared to those issued by the BLS for other cities.

The largest increases in the Retired Couple's Budget occurred in Clothing/Personal Care (22.2 percent), Transportation (13.3 percent) and Housing (10.8 percent). Table 1 details a comparison of the Phoenix area budgets for 1978 and 1979.

Percentage increases in all categories ranged from nearly 9 percent to more than 22 percent. Food expendi-

The largest percentage increases in the Retired Couple's Budget occurred in the areas of clothing and personal care, transportation, and housing, while food showed the largest dollar increase.

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FIGURE I
TOTAL BUDGET
(Retired Couple's Budget)

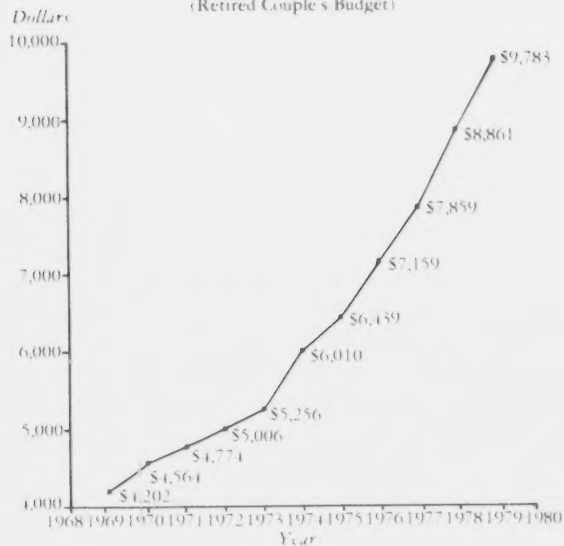


FIGURE II
FOOD
(Retired Couple's Budget)

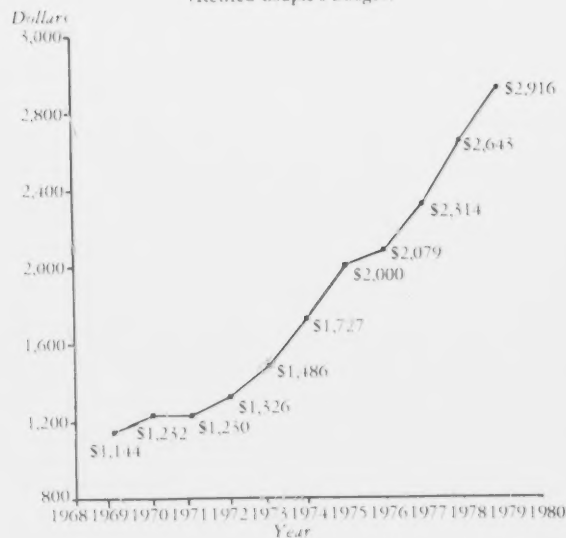


FIGURE III
HOUSING
(Retired Couple's Budget)

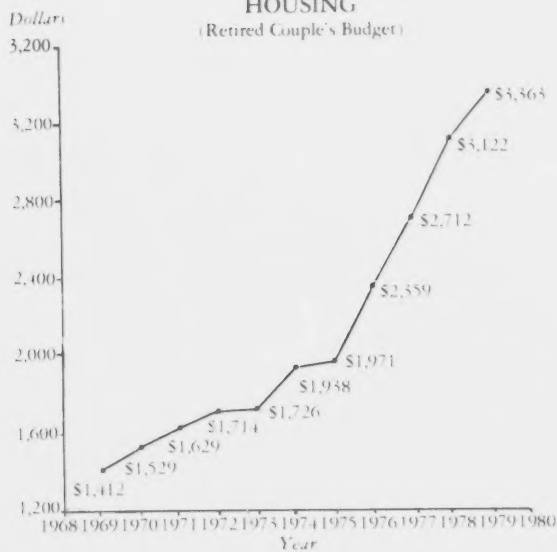
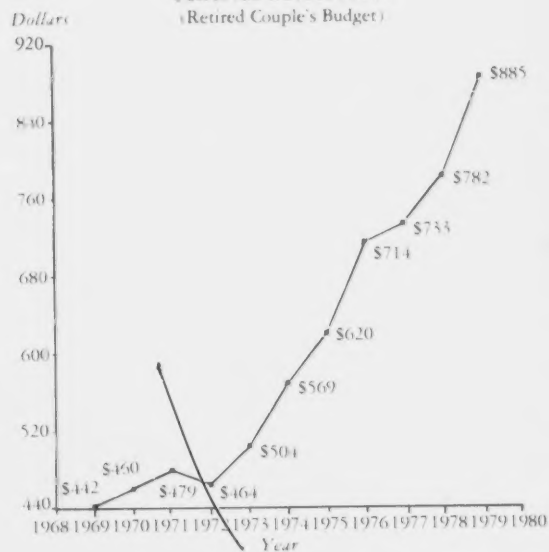


FIGURE IV
TRANSPORTATION
(Retired Couple's Budget)



Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperation with Valley National Bank.

FIGURE V
CLOTHING/PERSONAL CARE
(Retired Couple's Budget)

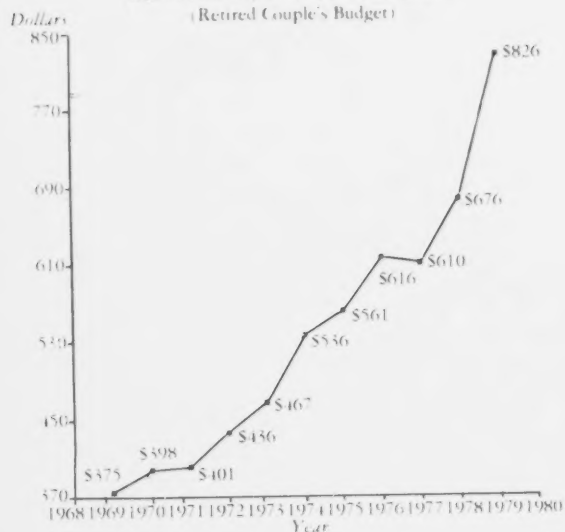


FIGURE VI
MEDICAL CARE
(Retired Couple's Budget)

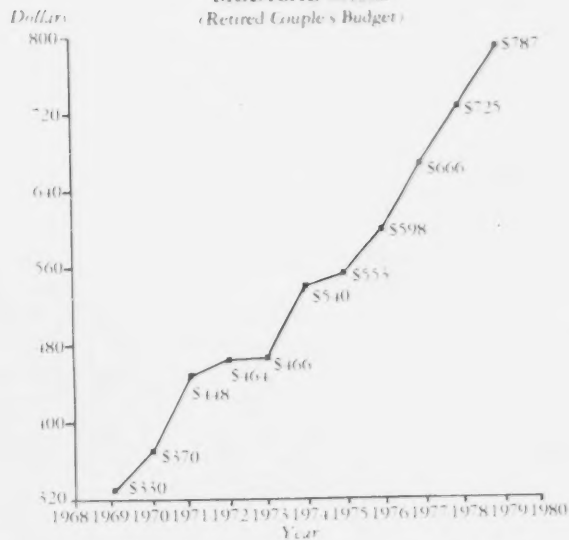


FIGURE VII
OTHER FAMILY CONSUMPTION
Alcoholic Beverages; Tobacco
Products; Reading and Recreation
(Retired Couple's Budget)

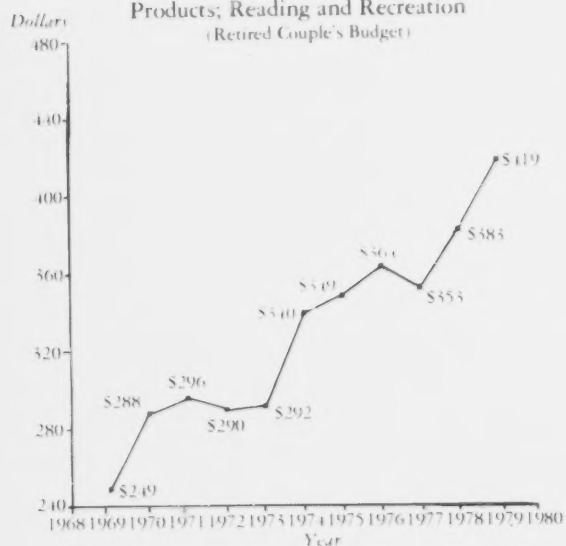
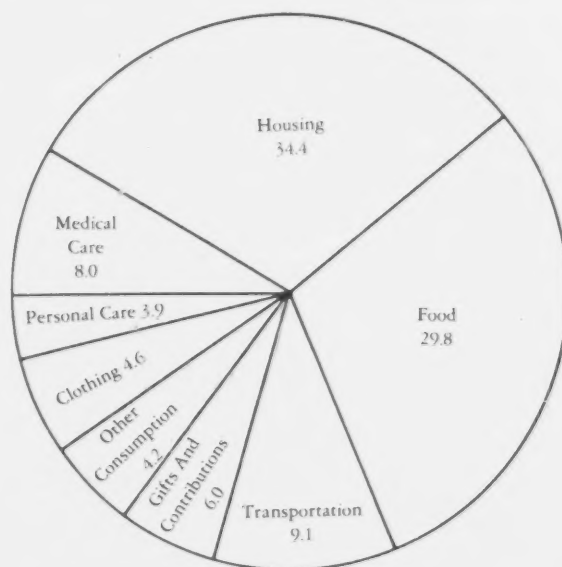


FIGURE VIII
PERCENTAGE DISTRIBUTION
OF EXPENDITURES, 1979
(Retired Couple's Budget)



Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperation with Valley National Bank.

tures for the year increased \$273, an increase of 10.3 percent over 1978, showing a comparatively low percentage gain but the highest dollar increases for the individual consumption categories. Housing costs, which jumped \$241 (10.8 percent) showed the second highest dollar gain. Transportation costs, with the second highest percentage gain, 13.3 percent, increased \$104. The Clothing/Personal Care category reported the highest percentage gain, 22.2 percent, resulting in a \$150 increase. Medical Care jumped \$62 for the lowest percentage increase of all budget categories, 8.6 percent. Other Family Consumption went from \$383 to \$419 showing a 9.4 percent increase. Other Items, a category that consists of gifts and contributions, increased \$55 for a 10.4 percent increase.

TABLE 1

RETIRED COUPLE'S BUDGET
METROPOLITAN PHOENIX
(Percentage change 1978-1979)

	1979	1978 ^a (Revised)	Percentage Change
Total Budget	\$9,783	\$8,861	10.4
Total Family Consumption	9,196	8,330	10.4
Food	2,916	2,643	10.3
Housing	3,363	3,122	10.8
Transportation	886	782	13.3
Clothing/Personal Care	826	676	22.2
Medical Care	787	725	8.6
Other Family Consumption	419	383	9.4
Other Items ^b	586	531	10.4

Note: Details may not add due to rounding.

^aOther Items consist of gifts and contributions.

^b1978 figures have been adjusted to reflect appropriate budget weights and tax rates.

Source: Phoenix data are compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cosponsorship with the Valley National Bank.

Figures I through VII display the historic eleven-year trend for the Phoenix area budget categories. The increases in each category are demonstrated by the steep slopes of these lines for the past few years.

DISTRIBUTION OF EXPENDITURES

Table 2 details the comparison of the 1978 and 1979 distribution of budget expenditures. The distribution for the 1979 budget is graphically depicted in Figure VIII.

No significant change in the allocation of the budget was detected as prices increased broadly during the past year.

Family Consumption took 94 percent of the total budget. Food and Housing each represented approximately one-third of the total budget. Thus, with Food taking 29.8 percent and Housing requiring 34.4 percent, these two categories consumed nearly two-thirds of the Phoenix retired couple's budget.

TABLE 2

PHOENIX RETIRED COUPLE'S BUDGET:
PERCENTAGES OF TOTAL BUDGET
AUTUMN, 1979, AND AUTUMN, 1978

	1979 (Percentage of Total Budget)	1978 ^a (Percentage of Total Budget)
Total Budget	100.0	100.0
Total Family Consumption	94.0	94.0
Food	29.8	29.8
Housing	34.4	35.2
Transportation	9.1	8.8
Clothing/Personal Care	8.4	7.6
Medical Care	8.1	8.9
Other Family Consumption	4.3	4.3
Other Items ^b	6.0	6.0

Note: Details may not add due to rounding.

^a1978 figures have been adjusted to reflect appropriate budget weights and tax rates.

^bOther Items consist of gifts and contributions.

Source: Phoenix data are compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cosponsorship with the Valley National Bank.

SUMMARY AND FORECAST

The increase of 10.4 percent in the retired couple's budget for the Phoenix metropolitan area continued in the double-digit range but eased slightly from the 1978 increase of 12.4 percent.² The increase for 1979 is about two-thirds the increase in the Consumer Price Index (CPI) during this same time period (15.3 percent).³ The difference can be partially explained by the assumption that 65 percent of the retired couples own their own home with no mortgage. Furthermore, the subset of items priced for this budget is not as comprehensive as the CPI price data. However, based upon the ever increasing CPI figures, the Phoenix area retired couple should be in for another year of double-digit increases for 1980.

¹This research is cosponsored by the Valley National Bank.

²"Phoenix Retired Couple's Budget," *Arizona Business*, November, 1979.

³"Metropolitan Phoenix Consumer Price Index, Fourth Quarter, 1979," *Arizona Business*, February, 1980.

Doctoral Dissertation Abstract

COLLEGE OF BUSINESS ADMINISTRATION
ARIZONA STATE UNIVERSITY

Editor's Note: Our readers are often interested in research undertaken by doctoral candidates in the College of Business Administration at Arizona State University. Therefore, we occasionally include one or two abstracts of doctoral dissertations in Arizona Business. Readers who wish further information on any of these subjects may examine the complete dissertations in the ASU Hayden Library.

AN ANALYSIS OF COMMUNICATION BARRIERS IN PUBLIC ACCOUNTING FIRMS

Steven Golen

Accountants in public practice are involved in essentially two types of communication situations, and these situations are classified according to the two types of intended receivers. First, the accountants attempt to communicate with clients (i.e., accountant-client communications). Second, the accountants must communicate among themselves (i.e., accountant-accountant communications).

The purpose of this study was to determine which communication barriers to effective communication are perceived as most serious by accountants in their accountant-client relationship and their accountant-accountant relationship in the audit, tax, and management advisory services departments in public accounting firms in the Greater Phoenix Metropolitan Area.

One instrument was used to measure the degree of seriousness regarding thirty-three communication barriers. The accountants were asked to complete the instrument based on their accountant-client relationship and their accountant-accountant relationship.

The one-way analysis of variance was used for the statistical analysis of two major and twenty-two minor hypotheses. Also, the one-way analysis of variance was used to determine if there was any significant difference between each item on the instrument and the various demographic characteristics in both the accountant-client and accountant-accountant relationships. A composite rank of the communication barriers was based on mean scores.

Accountants perceive the seriousness of the communication barriers the same regardless of their current department, type of firm, age, sex, years in public accounting, highest degree attained, completion of a communications course, state where undergraduate degree was received, and membership in a social or fraternal collegiate organization.

In regard to the accountants' present position and attainment of a CPA, the perceptions of the seriousness of the barriers are not the same. The accountants in lower-level staff positions (i.e., junior and senior staff) and those who do not have a CPA, perceive the communication barriers as more serious.

Based on mean ratings, a "hostile attitude" was ranked as the most serious in the accountant-client relationship, and a "tendency not to listen" was ranked as the most serious in the accountant-accountant relationship.

In the comparison of the accountant-client relationship and the accountant-accountant relationship, only four out of thirty-three barriers were significant when comparing the means of the individual barriers between the two relationships. Therefore, the accountants will likely perceive the communication barriers the same regardless of the relationship.

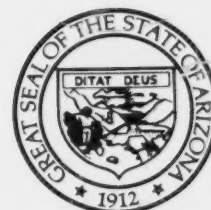
The significant barriers could be used as a guide for study and research in business communications and accounting classes. Also, accounting students should be challenged to develop their interpersonal skills by analyzing potential barriers to effective communications in small group discussions.

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The Arizona Business Scene



Recent Trends in Arizona Electrical Power Sales



The volume of Arizona's electrical power sales, reported monthly in *Arizona Business*, is used as one of several economic indicators. In addition, electrical power sales are of growing interest due to high costs and to shortages in the energy supply. Two previous "Arizona Business Scene" articles have discussed trends in this economic indicator (December, 1977, and February, 1979, issues). Recent changes in these trends as well as other aspects of this economic indicator are reviewed in this article.

Electrical power in Arizona is used by various types of customers: residential, commercial, large user (primarily industrial and mining), irrigation, and others. Over the past 25 years significant changes have occurred in the share of electrical power used by each of these types of customers (the *demand mix*), as illustrated in Table 1. The changes in the demand mix indicate the changes the state has undergone during these years of rapid growth. From 1955 to 1965 the percentage of power used by residential, commercial, and large user customers increased while the percentage of sales for agricultural purposes decreased significantly. Since 1965, commercial and large user percentages have been relatively stable. The share of residential usage has continued to increase and that of agriculture has decreased, but this trend has slowed in recent years. These changes in the demand mix indicate that the Arizona economy is maturing with a balance among commercial, industrial and mining, and agricultural sectors. Residential growth is slowing to near the same pace as that of the economy as a whole.

Total electrical power sales have increased steadily in Arizona. Through 1974, yearly total sales increased rapidly, with the annual rate of increase often exceeding 10 percent, although the rate of growth has been slower since 1974 as illustrated in Table 2. The growth in electrical power sales has been due to both increased sales per customer and to the growth of the state, which has resulted in many more users of electrical power. For residential power sales, population growth is not a good measure of growth in sales, however, because the number of households (and thus the number of customers) has increased more rapidly than the population due to a decrease in household size. Commercial and large user sales of electrical power have increased at approximately the same rate as the population growth rate.

Table 2 shows that energy usage per customer (residential sales per household) increased rapidly through 1973 but has stabilized since then. Essentially the same pattern is present in both commercial and large user sales per capita. The energy shortage with its accompanying rapid price increases first began in 1974. These price increases and the national campaign to conserve energy has resulted in a leveling off of electrical usage per customer. Since 1974 the increase in total electrical sales has been caused essentially by new people moving into the state and by new businesses and industries.

Thus each electrical power customer is no longer using more electrical power each and every year. But each customer is still using as much electrical power as at

TABLE 1
PERCENTAGE OF ELECTRICAL POWER USED IN ARIZONA
BY TYPE OF CONSUMER, 1955-1979

	Residential	Commercial	Large User	Irrigation	Other	Losses	Total*
1955.....	16.4	21.0	15.6	33.2	2.5	11.4	100.1
1960.....	19.7	21.4	23.1	23.9	2.8	9.6	100.5
1965.....	22.6	24.2	26.8	15.4	1.9	9.6	100.5
1970.....	26.3	24.5	26.5	11.5	2.0	9.2	100.0
1975.....	30.2	24.7	23.2	10.5	2.5	8.8	99.9
1976.....	29.1	25.9	25.1	8.6	2.5	8.6	99.8
1977.....	30.0	25.2	23.2	7.7	6.0	8.0	100.1
1978.....	30.4	25.1	23.3	6.0	5.8	9.3	99.9
1979.....	30.8	24.8	24.9	6.6	5.1	7.8	100.0

*Total may not equal 100.0 due to rounding.

Source: 1955-1977 reprinted from *Arizona Business*, February 1979. Calculated from Arizona Power Authority data.

TABLE 2
ARIZONA ELECTRICAL POWER SALES
(In Thousands of Kilowatt Hours)

	Total Sales	Residential Sales Per Household
1970	15,602,200	7,500
1971	17,074,400	8,000
1972	19,251,200	8,700
1973	20,905,900	9,400
1974	23,132,500	9,250
1975	23,523,900	9,350
1976	24,663,400	9,050
1977	25,848,300	9,350
1978	27,157,900	9,100
1979	28,296,500	9,100
1980*	30,572,000	9,500

*projected

Source: Arizona electrical power sales from the Arizona Power Authority. Number of households estimated from 1970 Census data, U.S. Department of Commerce and *Inside Phoenix* data, various years, published by Phoenix Newspapers Inc.

the same time of the first energy crisis, which is considerably more usage than in years just prior to 1973. So far in 1980 (through September), electrical sales per customer are at the highest level ever. Hot summertime temperatures explain only a portion of this increase in usage. It appears that the more abundant supply of energy and the relatively slower price increases of the last couple of years have resulted in somewhat greater usage of electrical power per customer.

An increase in electrical power usage per customer has strong implications for future power requirements, particularly in the peak summer months. Electrical power sales in Arizona are quite seasonal, but in a pattern different from that of most of the country. In Arizona, demand for electrical power is heavy in the summer, particularly in July and August. The months of November through April tend to have relatively less demand. This seasonality, caused primarily by weather conditions, means that electrical generators must have a large capacity to meet the summer demand, thus leaving substantial unused capacity during most of the other months. As electrical power sales in Arizona have grown, the difference in sales between the summer months and the winter months has also been increasing, representing an increase in unused capacity in the winter months.

A review of electrical power sales is important for two reasons. First, electrical sales indicate the condition of certain aspects of the economy by reflecting the number and mix of residential, commercial, industrial, and agricultural customers as well as the electrical usage per customer. Second, electrical power sales have become increasingly important due to the cost and shortage of energy. Planning for energy needs must include a forecast of both the growth of the state and the power usage per customer. The current increase in the usage of electrical power per customer is important in determining these future power requirements.

A Survey of Arizona Business Conditions

HAROLD FEARON

The economic recovery is off and running, according to results from the October monthly business survey of the Purchasing Management Association of Arizona. The key indicators of new orders received, production, and employment were all positive for the second month in a row, showing that Arizona is back on the growth track again. The low point of the recession was in July, and the economy has been building momentum each month since.

The purchasing business survey is in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity—higher, unchanged, or lower—on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Prices paid for major purchased items continued to increase in October at a higher rate than in September, and at the highest month-to-month increase rate since last April. Higher prices were reported by 59 percent of the purchasing managers, 37 percent said prices were

unchanged, and 4 percent paid lower prices in October than in September. The low point in the inflation rate was in August, and it has been intensifying in each of the two months since. The recession in Arizona was neither long nor severe enough to reduce inflation to an acceptable level, and it is likely to get worse over the balance of the year and into 1981.

Delivery time on shipments from vendors continued to stretch out, and at a rate twice as great as in September. Faster deliveries were reported by 12 percent of the firms, but about twice as many firms (27 percent) saw a slowdown in vendor delivery performance. Since the three months showing shorter delivery times (May through July), vendor service times have gone up at an increasing rate in August, September, and October as the economy continues to build up a head of steam in the recovery.

Inventory levels of purchased materials stabilized in October after six consecutive monthly declines. While 29 percent of managers added to stocks, 30 percent cut inventory, showing that inventory liquidations have about ended. Inventory levels will likely increase in each of the next several months, as firms begin to build stocks back up to levels needed to service the higher operating rates now required to meet customer demand.

New orders went up again, for the third consecutive month, and at a rate consistent with that in September. A higher new order rate was reported by 24 percent of the firms, compared to only 22 percent who saw a decline in the rate at which new business was booked.

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The Arizona economy definitely has turned the corner, after four down months in April through July, and is moving up at a good pace in the fourth quarter.

Production increased strongly in October, with a net increase rate almost three times as great as in September. The survey shows 34 percent raised output; only 17 percent cut production in October. This was the third consecutive monthly increase, following on the heels of four monthly declines, and was the largest increase since last October. The strong upswing in production is a reaction to the stronger new order picture which should continue over the next several months.

Employment in Arizona firms registered a good jump for the second month in a row. The net increase rate in October was over twice as great as in September. Higher employment was reported by 25 percent of the firms, compared to only 13 percent who pared payrolls. The October net increase was the largest since last January. Employment turned positive about a month later than both new orders and production; this lag is typical when the economy begins to pull out of a slump.

The latest crop of figures confirm again that business activity is on the rise, and that the Arizona economy weathered a short and shallow recession without any serious, long-term effects. The recovery is well under way and should continue through the fourth quarter and into the new year.

TABLE 1
OCTOBER PURCHASING SURVEY

*Percent of Purchasing Managers
Indicating Each Response
(October compared to September)*

<i>Key Indicators</i>	<i>Higher</i>	<i>Same</i>	<i>Lower</i>
Prices paid for major commodities	59	37	4
Delivery time from vendors	27	61	12
Purchased materials inventory level	29	41	30
New orders received	34	44	22
Production	34	49	17
Employment	25	62	13

Source: Survey of the Purchasing Management Association of Arizona.

ARIZONA SALES OF ELECTRICAL POWER By Months (In millions of kwh)

	<i>Actual</i>		<i>Percent Change Current Month</i>	
	<i>1980</i>	<i>1979</i>	<i>From</i>	<i>From</i>
			<i>Same Month</i>	<i>Previous</i>
			<i>Previous Year</i>	<i>Month</i>
September	2,670.9	2,833.7	-5.75	-15.63

Source: Based on reports from major suppliers.

Arizona Construction Activity:

Quarterly Report

JAY Q. BUTLER

THIRD QUARTER, 1980

Although increasing indications of economic improvement have been observed, the negative factors of rising interest rates and inflation still persist. Interest rates began to increase again in August with no signs of any appreciable decline for the remainder of 1980 or even early 1981. Inflation, which had shown signs of easing, has again moved into the double-digit range, largely due to increasing food prices. Both forces create a significant drag on the economy, but neither show signs of abating in the near future. Thus, a sluggish economic recovery is expected to persist well into 1981.

During the early part of the third quarter, interest and inflation rates appeared to be declining. In response to this positive economic condition, the residential sector led total construction activity in Maricopa County to a 32 percent increase over the second quarter—from \$315,046,223 to \$415,839,592, a level that is comparable to one year ago when it was \$412,105,218.

For the remainder of Arizona, total construction activity was \$269,800,796, representing a 40 percent increase over the second quarter (\$191,979,597), and a 5 percent increase over a year ago (\$257,209,094).

While residential activity intensified significantly, the commercial and industrial sectors were relatively stagnant. Tables 1 and 2 show the activity in the various sectors over the past seven quarters.

Residential Sector

Maricopa County. Because many people felt the economic climate was improving, residential activity in Maricopa County showed a 62 percent increase to 7,336 permits from the 4,518 permits of the second quarter. This is a 5 percent increase over the third quarter of 1979

(7,014 permits). The value of residential construction activity (\$203,725,518) appreciated significantly with a 158 percent increase over the \$79,844,790 recorded in

TABLE 1

ARIZONA QUARTERLY HOUSING STARTS

	BUILDING PERMITS ISSUED				
	1 • Family	3-4 Duplex	5 or Families	Housing More	Units
1979					
FIRST QUARTER					
Maricopa County	7,228	17	58	186	10,650
Rest of State	4,481	49	27	16	5,100
Arizona Total	11,790	66	85	202	15,750
SECOND QUARTER					
Maricopa County	8,227	69	110	84	11,944
Rest of State	6,291	30	30	21	7,257
Arizona Total	14,518	99	140	105	19,201
THIRD QUARTER					
Maricopa County	5,019	40	48	177	9,389
Rest of State	5,341	46	34	39	7,621
Arizona Total	10,360	86	82	216	17,010
FOURTH QUARTER					
Maricopa County	3,654	48	54	71	6,256
Rest of State	4,220	39	26	32	5,560
Arizona Total	7,874	87	80	103	11,822
1980					
FIRST QUARTER					
Maricopa County	3,418	28	42	105	6,320
Rest of State	3,452	32	42	12	4,204
Arizona Total	6,870	60	84	117	10,524
SECOND QUARTER					
Maricopa County	2,234	54	86	77	4,729
Rest of State	3,395	38	25	21	4,128
Arizona Total	5,629	92	111	98	8,857
THIRD QUARTER					
Maricopa County	5,397	51	47	78	7,602
Rest of State	4,336	41	43	32	4,962
Arizona Total	9,733	92	90	110	12,654

*Includes mobile homes.

Source: Compiled from data published in *Arizona Business*, Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

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the second quarter, and a 25 percent increase above the \$163,059,602 posted a year ago.

The single-family housing sector (including mobile homes) increased 141 percent from the second quarter (2,234 to 5,397 permits), and 8 percent above the 5,019 permits of a year ago. The resurgence in the single-family sector is shown by the fact that it accounted for only 50 percent of total residential permits issued in the second quarter, but rose to a more typical 74 percent in the third quarter. Although total quarterly activity showed an increase, the monthly single-family sector activity reveals a declining trend: July, 1,799 permits; August, 1,967 permits; and September, 1,631 permits. These levels are well above those in the early months of 1980, but a continued decline is expected in response to higher interest rates and uncertain economic conditions.

All Other Arizona Counties. Because the rest of Arizona did not suffer the same decline as Maricopa County, the resurgence in residential activity was not as strong. The 6,752 permits issued represented a 2 percent increase over the 6,590 permits of the second quarter, but a 25 percent decline from the 9,030 permits of a year ago. The single-family segment increased from 51 percent to 64 percent of total residential activity. The recorded dollar value of \$167,628,708 was a 62 percent

increase over the \$103,542,039 of the second quarter and an 8 percent increase from the of a year ago.

The 4,336 single-family permits (including mobile homes) was a 27 percent increase over the second quarter (3,395 permits) but an 18 percent decline from a year ago (5,341 permits). On a month-by-month basis for the third quarter, a very stable pattern was shown: July, 1,498 permits; August, 1,365 permits; and September, 1,440 permits. Pima County reported 1,725 single-family permits (40 percent of the total in Arizona) which was a 34 percent increase over the 1,284 permits of the second quarter, but a 31 percent increase from the 2,488 permits of a year ago. Comparable patterns of single-family construction activity can be found in Coconino, Mohave, and Yavapai counties.

Commercial Sector

Maricopa County. In the third quarter, contrary to previous quarters, the commercial sector posted a decline while the residential sector was increasing. The 393 recorded commercial permits represented a 47 percent decline from the 738 permits of the second quarter, and a 30 percent decrease from the 564 permits of the third quarter of 1979. Because many smaller projects were granted permits in the second quarter, the dollar value only declined 25 percent (\$134,559,233 to

TABLE 2

ARIZONA QUARTERLY BUILDING PERMIT ACTIVITY

		RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
		Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
1979	FIRST QUARTER										
	Maricopa County	9,519	207,680,328	568	99,325,216	108	13,227,668	5,826	86,687,577	16,021	406,920,789
	Rest of State	8,550	126,721,479	515	35,557,067	52	40,806,011	2,348	23,441,380	11,043	224,525,937
	Arizona Total	17,869	334,401,807	881	132,882,283	140	54,033,679	8,174	110,128,957	27,064	631,446,726
	SECOND QUARTER										
	Maricopa County	10,593	245,886,557	563	107,706,741	114	31,598,095	7,239	58,649,086	18,509	443,840,479
	Rest of State	10,801	177,943,784	413	83,445,863	21	5,166,240	2,700	30,144,970	13,935	302,700,857
	Arizona Total	21,394	423,830,341	976	191,152,604	135	36,764,335	9,934	88,794,056	32,444	746,541,336
	THIRD QUARTER										
	Maricopa County	7,014	163,059,602	564	129,297,596	163	43,106,632	5,908	76,641,388	13,649	412,105,218
	Rest of State	9,030	154,644,619	363	70,701,365	27	3,631,771	2,945	28,231,341	12,365	257,209,094
	Arizona Total	16,044	317,704,221	927	199,998,959	190	46,738,403	8,853	104,872,729	26,014	669,314,312
	FOURTH QUARTER										
	Maricopa County	5,864	134,935,967	512	128,226,226	127	40,249,131	5,281	57,274,578	11,784	360,685,902
	Rest of State	7,408	118,051,966	411	73,966,907	9	658,963	2,109	20,254,659	9,937	212,932,491
	Arizona Total	13,272	252,987,933	923	202,193,133	136	40,908,094	7,390	77,529,236	21,721	573,618,397
1980	FIRST QUARTER										
	Maricopa County	6,173	120,797,718	510	123,606,604	149	42,596,153	5,575	60,706,632	12,407	347,707,107
	Rest of State	6,694	97,272,425	355	73,441,664	14	3,444,490	2,419	21,996,869	9,482	196,155,448
	Arizona Total	12,867	218,070,143	865	197,048,268	163	46,040,643	7,994	82,703,501	21,889	543,862,555
	SECOND QUARTER										
	Maricopa County	4,518	79,844,790	738	134,559,233	128	35,247,376	4,698	65,394,824	10,082	315,046,223
	Rest of State	6,590	103,542,039	390	56,571,666	25	5,313,236	3,068	26,551,156	10,073	191,979,597
	Arizona Total	11,108	183,386,829	1,128	191,132,399	153	40,560,612	7,766	91,945,980	20,155	507,025,820
	THIRD QUARTER										
	Maricopa County	7,336	203,725,518	393	101,005,229	148	30,546,533	5,183	80,562,312	13,060	415,839,592
	Rest of State	6,752	167,628,708	379	50,695,501	14	1,137,750	3,274	50,338,837	10,419	269,800,796
	Arizona Total	14,088	371,354,226	772	151,700,730	162	31,684,283	8,457	130,901,149	23,479	685,640,388

Source: Compiled from data published in *Arizona Business*, Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

\$101,005,229) and 22 percent from a year ago (\$129,297,596 to \$101,005,229).

Although apartment construction of five or more units declined 56 percent (177 to 78 permits) from a year ago, it is comparable to the 77 permits of the second quarter. For the last year, each five-or-more-unit permit has typically represented 23 to 25 housing units. The primary area of decline in the commercial sector can be attributed to a reduction in the number of office and shopping center developments.

All Other Arizona Counties. The rest of Arizona tends to have a smaller economic base, thus commercial development activity is not as volatile. The 379 permits issued represented a 3 percent decline from the second quarter (390 permits), but a 4 percent increase over the 363 permits of a year ago. The \$50,695,500 in recorded dollar value is an 11 percent decline from the \$56,573,166 of the second quarter and a 28 percent decline from the \$70,701,363 of the third quarter of 1979.

Apartment development was up appreciably over the second quarter (by 21 permits) with 32 permits, 18 permits of which were in Pima County. Pima and Mohave counties again posted good levels of commercial performance, and Coconino County recorded a 400 percent increase in dollar value (\$888,081 to \$4,740,249).

Industrial Sector

Maricopa County. Industrial development continued with very stable performance, especially in consideration of the economic conditions. The 148 permits is a 12 percent increase (128 to 148 permits) over the second quarter, but a 9 percent decrease over the 163 permits issued last year. Because some of the current activity is in developing the shells for smaller warehouses, the \$30,546,533 in recorded dollar value is down 11 percent for the preceding quarter (\$35,247,376), and down 28 percent from a year ago (\$43,106,632). Given the current economic climate, industrial activity is especially good and is needed to support continued economic development. The main geographical areas of development continued to be Phoenix: 41 permits at \$13,571,251; and Tempe: 92 permits at \$13,676,400.

All Other Arizona Counties. Like the commercial sector, industrial development is very limited. Reports of activity can be greatly affected by one or two projects, such as the IBM development in Pima County.

In the third quarter, only 14 permits (valued at \$1,137,750) were recorded. This represents a 44 percent decline in issued permits (25 permits) and an 80 percent decline in dollar value (\$5,313,236). No large projects were recorded and most of the activity was scattered.

LOOKING AHEAD

One of the main questions is the impact that the new administration will have on the economy. No specific programs have been announced nor could any be determined at this time, but the business community has great expectations that the new administration will have a positive effect on the economy. Because decisions are based not only on what is, but also on what is expected, a more positive outlook can be expected relative to investment and purchase decisions. However, one should not be overly optimistic for the short term because most economists foresee conditions remaining unchanged for at least the next six months.

The dual forces of rising inflation and higher interest rates adversely affect all aspects of the real estate industry. In the commercial and industrial sectors, these forces increase construction and operating costs, but because rent levels have remained fairly stable, new developments are not very attractive. Once the economy is perceived as being more sound and interest rates decrease, there should be a very definitive resurgence in construction activity—first in Maricopa County, then spreading throughout the state.

In the residential sector, the affordability of new homes remains a serious question. During the 1970s, new homes were purchased through the contribution of a second wage earner and by rearrangement of household spending patterns, but the impact of these household modifications may have run its course. Thus, consumers are showing increasing interest in various methods of producing more affordable homes.

A recent survey of homebuilders and the general public, conducted by the Bureau of Business and Economic Research and sponsored by Phoenix Magazine Publishing, Inc., showed some divergence of opinion on ways to make homes more affordable. Homebuilders tended to favor the methods of decreasing house size and lot size, while the general public ranked these methods relatively low. Both homebuilders and the general public agreed that having homes prefabricated in a factory is an unacceptable method. The most acceptable method for both surveyed groups concerned the proposal to build homes that can be enlarged, if desired, at a later time.

Continued inflation can be expected to lead the Federal Reserve to tighten credit, pushing interest rates even higher. Because of sluggish economic conditions, the recovery in the construction industry should not really begin until well into 1981. The overall uncertainties concerning economic activity suggest that the real estate market activity could be very inconsistent throughout most of 1981.

Arizona New Housing Starts: Quarterly Report

THIRD QUARTER, 1980

BUILDING PERMITS ISSUED

	1* Family	2 Duplex	3-4 Families	5 or More	Housing Units
APACHE COUNTY	39	—	—	—	39
Fagar	11	—	—	—	11
S. Johns	12	—	—	—	12
Springerville	5	—	—	—	5
Uninc. Apache Co.	11	—	—	—	11
COCHISE COUNTY	230	—	—	—	230
Benson	6	—	—	—	6
Bisbee	—	—	—	—	—
Douglas	10	—	—	—	10
Huachuca City	3	—	—	—	3
Sierra Vista	96	—	—	—	96
Tombstone	3	—	—	—	3
Uninc. Cochise Co.	104	—	—	—	104
Willcox	8	—	—	—	8
COCONINO COUNTY	364	6	1	1	390
Flagstaff	91	6	—	1	113
Fredonia	6	—	—	—	6
Page	41	—	—	—	41
Uninc. Coconino Co.	224	—	1	—	228
Williams	2	—	—	—	2
GILA COUNTY	148	2	—	1	157
Globe	7	1	—	—	9
Hayden	—	—	—	—	—
Miami	—	—	—	—	—
Payson	57	1	—	1	64
Uninc. Gila Co.	84	—	—	—	84
GRAHAM COUNTY	70	—	—	—	70
Pima	6	—	—	—	6
Safford	6	—	—	—	6
Thatcher	6	—	—	—	6
Uninc. Graham Co.	52	—	—	—	52
GREENLEE COUNTY	1	—	—	—	1
Clifton	1	—	—	—	1
Duncan	—	—	—	—	—
Uninc. Greenlee Co.	—	—	—	—	—
MARICOPA COUNTY	5,397	51	47	78	7,692
Avondale	11	—	—	—	11
Buckeye	2	—	—	—	2
Chandler	576	1	7	—	606
El Mirage	—	—	—	—	—
Gila Bend	2	—	—	—	2
Gilbert	38	—	—	—	38
Glendale	420	—	—	13	516
Goodyear	—	—	—	—	—
Guadalupe	2	—	—	—	2
Mesa	655	40	5	11	1,116
Paradise Valley	30	—	—	—	30
Peoria	120	—	—	—	120
Phoenix	1,852	9	20	32	3,215
Scottsdale	287	—	—	11	441
Surprise	4	—	—	—	4
Tempe	247	1	10	11	398
Tolleson	—	—	—	—	—
Uninc. Maricopa Co.	1,165	—	5	—	1,185
Wickenburg	6	—	—	—	6
Youngtown	—	—	—	—	—

BUILDING PERMITS ISSUED

	1* Family	2 Duplex	3-4 Families	5 or More	Housing Units
MOHAVE COUNTY	531	3	5	4	620
Kingman City	42	—	—	—	42
Kingman Area	86	—	3	—	98
Lake Havasu City	130	—	2	4	201
Lake Havasu Area	21	—	—	—	21
Mohave Valley North	129	3	—	—	155
Mohave Valley South	71	—	—	—	71
Dolan Springs	25	—	—	—	25
Sacramento Valley	17	—	—	—	17
Mohave Co. General	10	—	—	—	10
NAVAJO COUNTY	279	2	—	2	503
Holbrook	6	—	—	—	6
Show Low	24	—	—	—	24
Snowflake	11	—	—	—	11
Taylor	6	—	—	—	6
Uninc. Navajo Co.	226	—	—	—	226
Winslow	6	2	—	2	30
PIMA COUNTY	1,726	23	16	18	2,076
Marana	2	—	—	—	2
Oro Valley	4	—	—	—	4
South Tucson	3	—	—	—	3
Tucson	515	19	16	17	848
Uninc. Pima Co.	1,207	4	—	1	1,219
PINAL COUNTY	181	—	10	—	220
Casa Grande	39	—	3	—	50
Coolidge	17	—	—	—	17
Eloy	—	—	—	—	—
Florence	—	—	—	—	—
Kearny	4	—	—	—	4
Mammoth	1	—	—	—	1
Superior	3	—	—	—	3
Uninc. Pinal Co.	117	—	7	—	145
SANTA CRUZ COUNTY	58	—	—	—	58
Nogales	N/R	N/R	N/R	N/R	N/R
Patagonia	2	—	—	—	2
Uninc. Santa Cruz Co.	36	—	—	—	36
YAVAPAI COUNTY	490	2	5	4	539
Chino Valley	35	—	—	1	41
Clarkdale	3	—	—	—	3
Cottonwood	14	—	—	—	14
Jerome	—	—	—	—	—
Prescott	58	—	3	1	78
Uninc. Yavapai Co.	302	—	—	2	315
Prescott Valley	78	2	2	—	88
YUMA COUNTY	239	3	6	2	279
Parker	—	—	—	—	—
Somerton	5	—	—	—	5
Uninc. Yuma Co.	124	1	—	1	132
Wellton	—	—	—	—	—
Yuma	110	2	6	1	142
TOTAL, Maricopa Co., Third Quarter 1980	5,397	51	47	78	7,692
TOTAL, Maricopa Co., Third Quarter 1979	5,019	40	48	177	9,389
PERCENT CHANGE	8	27	-2	-56	-18
TOTAL, Arizona, Third Quarter, 1980	9,735	92	90	110	12,654
TOTAL, Arizona, Third Quarter, 1979	10,360	86	82	216	17,010
PERCENT CHANGE	-6	7	10	-49	-26

*Includes mobile homes.

N/R: No report

Arizona Building Permits: Quarterly Report

THIRD QUARTER, 1980

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value	
APACHE COUNTY	46	834,610		—	—		—	—		2	41,000		48	875,610	
Eagar	14	432,700		—	—		—	—		1	1,000		15	433,700	
St. Johns	13	N/C		—	—		—	—		—	—		13	N/C	
Springerville	6	401,910		—	—		—	—		—	—		6	441,910	
Uninc. Apache County	13	8,362,592		21	1,481,083		—	—		310	831,147		14	10,674,622	
COCHISE COUNTY	379	214,020		4	437,800		—	—		13	40,990		28	692,810	
Benson	10	42,100		—	—		—	—		24	120,031		73	162,131	
Bisbee	49	936,041		2	757,426		—	—		43	109,707		76	1,803,174	
Douglas	31	105,934		1	10,000		—	—		4	23,700		24	139,634	
Huachuca City	19	3,369,154		4	66,157		—	—		180	232,216		314	3,667,527	
Sierra Vista	130	3,369,154		1	15,000		—	—		7	3,315		13	24,865	
Tombstone	5	6,550		7	145,700		—	—		36	290,188		162	3,744,026	
Uninc. Cochise Co.	119	3,308,138		2	49,000		—	—		2	11,000		20	440,455	
Wilcox	36	380,435		34	4,740,249		—	—		151	22,693,997		902	41,641,839	
COCONINO COUNTY	714	14,069,843		3	3,144,326		3	137,750		78	22,492,921		277	31,590,300	
Flagstaff	175	5,953,053		24	—		3	137,750		9	19,500		20	164,850	
Fredonia	8	7,600		—	—		—	—		22	64,000		90	985,376	
Page	65	913,976		3	7,400		—	—		9	81,652		475	8,830,571	
Uninc. Coconino Co.	460	7,170,416		6	1,578,523		—	—		35	35,944		40	70,742	
Williams	6	24,708		1	10,000		—	—		82	222,366		337	3,778,285	
GILA COUNTY	238	3,180,095		17	375,824		—	—		12	88,450		38	375,100	
Globe	26	286,650		—	—		—	—		—	—		1	37,555	
Hayden	1	37,555		—	—		—	—		—	—		12	43,500	
Miami	10	18,000		1	25,000		—	—		1	500		12	43,500	
Payson	89	889,345		14	309,357		—	—		59	118,016		162	1,316,718	
Uninc. Gila Co.	112	1,948,565		2	41,467		—	—		10	15,400		124	2,005,432	
GRAHAM COUNTY	123	1,699,505		6	611,000		1	7,000		12	357,050		142	2,674,555	
Pima	6	113,090		—	—		—	—		—	—		6	113,090	
Safford	31	582,425		4	201,000		1	7,000		8	148,050		44	738,475	
Thatcher	20	346,200		1	260,000		—	—		2	9,000		25	615,500	
Uninc. Graham Co.	66	857,490		1	150,000		—	—		2	200,000		69	1,207,490	
GREENLEE COUNTY	3	9,000		—	—		1	10,000		1	400		5	19,400	
Clifton	1	N/C		—	—		—	—		—	—		1	N/C	
Duncan	2	9,000		—	—		1	10,000		—	400		4	19,400	
Uninc. Greenlee Co.	—	—		—	—		—	—		—	—		—	—	
MARICOPA COUNTY	7,336	203,725,518		393	101,005,229		148	30,546,535		5,183	80,562,312		13,060	415,839,592	
Avondale	13	157,900		2	66,000		—	—		28	137,444		43	361,344	
Buckeye	6	40,700		—	—		—	—		5	28,630		11	69,330	
Chandler	633	18,086,998		10	874,560		7	1,829,737		653	3,754,811		1,303	24,546,106	
El Mirage	2	3,500		—	—		—	—		—	—		2	3,500	
Gila Bend	2	41,000		—	—		—	—		—	—		2	41,000	
Gilbert	55	1,865,172		2	325,000		2	145,000		61	179,148		120	2,514,320	
Glendale	526	14,917,316		43	5,395,900		—	—		656	2,324,633		1,225	22,635,849	
Goodyear	—	—		1	150,000		—	—		28	913,052		29	1,063,052	
Guadalupe	5	38,100		—	—		—	—		—	—		5	38,100	
Mesa	780	13,961,089		64	15,086,043		3	1,290,775		718	8,257,931		1,565	38,595,838	
Paradise Valley	75	4,043,008		—	—		—	—		108	719,454		181	4,764,462	
Peoria	139	3,090,820		4	151,200		3	33,370		49	355,133		195	3,630,523	
Phoenix	2,608	85,516,053		112	54,429,159		41	13,571,251		1,710	52,625,624		4,471	206,142,047	
Scottsdale	389	17,006,013		43	14,615,497		—	—		560	3,464,581		992	35,086,091	
Surprise	10	48,330		1	72,000		—	—		13	27,950		24	148,280	
Tempe	354	9,769,000		58	4,323,000		92	13,676,400		245	4,244,400		747	32,012,800	
Tolleson	16	31,566		1	200		—	—		7	18,575		24	50,341	
Uninc. Maricopa Co.	1,672	34,845,122		52	5,518,690		—	—		328	3,358,290		2,052	43,722,102	
Wickenburg	7	215,200		—	—		—	—		1	14,450		8	229,650	
Youngtown	46	46,651		—	—		—	—		15	138,206		61	184,857	

Arizona Building Permits: Quarterly Report (Continued)

THIRD QUARTER, 1980

	RESIDENTIAL*			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Dollar Value
MOHAVE COUNTY	882	13,669,520	74	3,392,256	—	—	—	—	—	—	1,463,040	1,617	18,524,816	—	—
Kingman City	77	1,639,038	13	553,800	—	—	—	—	—	—	23,116	108	2,215,954	—	—
Kingman Area	133	1,233,331	5	197,088	—	—	—	—	—	—	103,596	257	1,534,015	—	—
Lake Havasu City	160	5,041,509	16	1,749,557	—	—	—	—	—	—	299,685	226	7,090,751	—	—
Lake Havasu Area	36	356,610	1	24,960	—	—	—	—	—	—	59,877	75	441,447	—	—
Mohave Valley North	263	3,005,439	32	638,046	—	—	—	—	—	—	654,330	557	4,297,815	—	—
Mohave Valley South	118	1,480,062	6	226,405	—	—	—	—	—	—	215,684	219	1,922,151	—	—
Dolan Springs	42	377,441	—	—	—	—	—	—	—	—	68,028	89	445,469	—	—
Sacramento Valley	32	325,564	—	—	—	—	—	—	—	—	34,729	60	360,293	—	—
Mohave County General	21	210,526	2	2400	—	—	—	—	—	—	3,995	26	216,921	—	—
NAVAJO COUNTY	454	7,795,524	20	1,787,407	—	—	—	—	—	—	1,052,530	501	10,635,061	—	—
Holbrook	21	342,790	—	—	—	—	—	—	—	—	53,000	25	395,700	—	—
Show Low	29	353,282	6	490,570	—	—	—	—	—	—	58,868	38	902,720	—	—
Snowflake	11	N/C	—	—	—	—	—	—	—	—	—	19	N/C	—	—
Taylor	9	284,500	—	—	—	—	—	—	—	—	—	9	284,500	—	—
Unic Navajo Co.	367	6,545,342	12	896,837	—	—	—	—	—	—	120,562	383	7,562,741	—	—
Winslow	17	269,500	2	400,000	—	—	—	—	—	—	819,900	27	1,489,400	—	—
PINAL COUNTY	2,393	79,001,069	123	33,573,002	—	—	—	800,000	—	—	16,621,108	4,052	129,995,179	—	—
Marana	3	N/C	—	—	—	—	—	—	—	—	—	3	N/C	—	—
Oro Valley	4	220,000	—	—	—	—	—	—	—	—	—	4	220,000	—	—
South Tucson	32	145,424	2	3,500	—	—	—	—	—	—	—	35	148,924	—	—
Tucson	884	18,577,242	85	23,907,802	—	—	—	800,000	—	—	12,276,358	1,674	55,561,402	—	—
Unic Pima Co.	1,470	60,058,403	36	9,661,700	—	—	—	—	—	—	4,344,750	2,336	74,064,853	—	—
PINAL COUNTY	299	13,386,322	21	901,944	—	—	—	14,000	—	—	4,881,368	453	19,183,634	—	—
Casa Grande	52	1,934,321	5	378,084	—	—	—	—	—	—	191,552	91	2,303,957	—	—
Coolidge	47	243,649	—	—	—	—	—	—	—	—	32,150	52	275,799	—	—
Eloy	12	8,809,057	—	—	—	—	—	—	—	—	4,149,479	18	12,958,536	—	—
Florence	5	200,250	1	5,000	—	—	—	—	—	—	33,475	20	238,725	—	—
Kearny	10	117,550	1	20,000	—	—	—	14,000	—	—	51,400	18	202,950	—	—
Mammoth	3	41,500	1	55,000	—	—	—	—	—	—	—	4	96,500	—	—
Superior	7	9,500	1	5,000	—	—	—	—	—	—	3,700	13	18,200	—	—
Unic Pinal Co.	163	2,030,495	12	438,860	—	—	—	—	—	—	419,612	237	2,888,967	—	—
SANTA CRUZ COUNTY	43	1,873,465	N/R	N/R	—	—	—	N/R	—	—	184,931	55	2,058,396	—	—
Nc ales	2	60,000	—	—	—	—	—	—	—	—	N/R	N/R	N/R	—	—
Pa gonia	41	1,813,465	—	—	—	—	—	—	—	—	3,850	6	63,850	—	—
Unic Santa Cruz Co.	796	15,257,239	45	2,547,721	—	—	—	—	—	—	181,081	49	1,994,546	—	—
YAVAPAI COUNTY	63	794,456	3	61,500	—	—	—	169,000	—	—	779,774	1,105	18,753,734	—	—
China Valley	14	107,180	—	—	—	—	—	—	—	—	73,510	94	929,466	—	—
Clarkdale	49	300,915	4	64,000	—	—	—	27,000	—	—	2,987	60	394,902	—	—
Cottonwood	—	—	1	6,000	—	—	—	—	—	—	—	1	6,000	—	—
Jerome	148	1,950,218	14	1,085,437	—	—	—	—	—	—	325,913	307	3,361,568	—	—
Prescott	415	10,455,648	17	1,155,560	—	—	—	30,000	—	—	367,764	513	12,008,972	—	—
Unic Yavapai Co.	107	1,648,822	6	175,224	—	—	—	112,000	—	—	9,600	116	1,945,646	—	—
Prescott Valley	382	8,490,324	18	1,285,015	—	—	—	—	—	—	1,210,326	492	10,985,665	—	—
Parker	2	16,600	1	12,000	—	—	—	—	—	—	5,300	6	33,900	—	—
Somerton	7	194,300	1	2,500	—	—	—	—	—	—	4,300	13	201,100	—	—
Unic Yuma Co.	184	3,529,232	6	504,230	—	—	—	—	—	—	564,130	209	4,597,592	—	—
Wellton	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Yuma	189	4,750,192	10	766,285	—	—	—	—	—	—	636,596	264	6,153,073	—	—
TOTAL Maricopa County,	7,336	203,725,518	393	101,005,229	—	—	—	30,546,533	—	—	80,562,312	13,060	415,839,592	—	—
Third Quarter, 1980	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL Maricopa County,	7,014	163,059,602	564	129,297,596	—	—	—	43,106,632	—	—	76,641,388	13,649	412,105,218	—	—
Third Quarter, 1979	5	25	-30	-22	—	—	—	-29	—	—	5	-4	1	—	—
PERCENT CHANGE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL Arizona,	14,088	371,354,226	772	151,700,730	—	—	—	31,684,283	—	—	130,901,149	23,479	685,640,388	—	—
Third Quarter, 1980	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
TOTAL Arizona,	16,044	317,704,221	927	199,998,959	—	—	—	46,738,403	—	—	104,872,729	26,014	669,314,312	—	—
Third Quarter, 1979	-12	17	-17	-24	—	—	—	-32	—	—	25	-10	2	—	—
PERCENT CHANGE	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

N/C: Not collected

N/R: No report; data for this month will be combined with data reported for the following month.

*Includes mobile homes.

SEPTEMBER, 1980

Arizona Building Permits: Monthly Report

CENSUS DIVISION	RESIDENTIAL*			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Dollar Value
APACHE COUNTY	19	251,410	—	—	—	—	—	—	—	40,000	—	—	20	291,410	—
Eagar	4	110,000	—	—	—	—	—	—	—	—	—	—	4	110,000	—
St. Johns	9	N/C	—	—	—	—	—	—	—	—	—	—	9	—	—
Springerville	3	N/C	—	—	—	—	—	—	—	—	—	—	3	—	—
Uninc. Apache County	3	141,410	—	—	—	—	—	—	—	—	—	—	3	181,410	—
COCHISE COUNTY	116	2,546,428	4	—	479,500	—	—	—	—	40,000	—	—	201	3,197,527	—
Benson	4	85,290	2	—	423,800	—	—	—	—	171,799	—	—	13	520,790	—
Bisbee	21	21,084	—	—	—	—	—	—	—	11,790	—	—	21	21,084	—
Douglas	10	297,675	—	—	—	—	—	—	—	—	—	—	21	342,377	—
Huachuca City	2	560	—	—	—	—	—	—	—	44,702	—	—	2	560	—
Sierra Vista	27	669,270	—	—	9,500	—	—	—	—	69,601	—	—	81	748,371	—
Tombstone	N/R	—	—	—	N/R	—	—	—	—	N/R	—	—	N/R	N/R	—
Uninc. Cochise Co.	45	1,338,759	1	—	46,000	—	—	—	—	35,706	—	—	55	1,420,465	—
Willcox	7	133,880	—	—	—	—	—	—	—	10,000	—	—	8	143,880	—
COCONINO COUNTY	230	5,544,490	18	—	1,576,882	—	2	137,000	—	627,609	—	—	315	7,885,281	—
Flagstaff	36	1,984,923	12	—	1,415,282	—	—	—	—	582,843	—	—	84	3,983,098	—
Fredonia	1	—	—	—	—	—	2	137,000	—	2,000	—	—	7	139,000	—
Page	23	336,666	3	—	7,400	—	—	—	—	—	—	—	41	344,066	—
Uninc. Coconino Co.	165	3,200,037	2	—	144,200	—	—	—	—	32,000	—	—	169	3,376,237	—
Williams	5	22,864	1	—	10,000	—	—	—	—	10,766	—	—	12	43,580	—
GILA COUNTY	92	1,269,911	2	—	74,174	—	—	—	—	97,050	—	—	119	1,441,135	—
Globe	7	56,750	—	—	—	—	—	—	—	17,950	—	—	16	74,700	—
Hayden	1	37,535	—	—	—	—	—	—	—	—	—	—	1	37,535	—
Miami	6	11,600	—	—	25,000	—	—	—	—	—	—	—	7	36,600	—
Payson	30	309,127	1	—	49,174	—	—	—	—	79,100	—	—	47	437,401	—
Uninc. Gila Co.	48	854,899	—	—	—	—	—	—	—	144,700	—	—	48	854,899	—
GRAHAM COUNTY	42	537,382	2	—	265,500	—	—	—	—	—	—	—	—	947,582	—
Pima	1	36,790	—	—	—	—	—	—	—	—	—	—	1	36,790	—
Safford	7	74,800	1	—	5,500	—	—	—	—	144,700	—	—	12	225,000	—
Thatcher	9	159,300	1	—	260,000	—	—	—	—	—	—	—	10	419,300	—
Uninc. Graham Co.	25	266,492	—	—	—	—	—	—	—	—	—	—	25	266,492	—
GREENLEE COUNTY	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Clifton	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Duncan	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Uninc. Greenlee Co.	—	62,718,126	—	—	—	—	—	—	—	35,891,987	—	—	—	148,701,999	—
MARICOPA COUNTY	2,269	16,400	135	—	43,165,478	—	57	6,926,398	—	10,744	—	—	3,985	27,144	—
Avondale	5	25,000	—	—	—	—	—	—	—	—	—	—	13	25,000	—
Buckeye	1	—	—	—	—	—	—	—	—	—	—	—	1	—	—
Chandler	157	4,313,484	2	—	220,000	—	4	402,568	—	481,037	—	—	321	5,417,089	—
El Mirage	N/R	N/R	N/R	—	N/R	—	N/R	N/R	—	N/R	—	—	N/R	N/R	—
Gila Bend	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Gilbert	7	74,902	2	—	325,000	—	1	140,000	—	41,225	—	—	29	580,927	—
Glendale	169	4,633,536	12	—	1,448,200	—	—	—	—	383,292	—	—	345	6,465,028	—
Goodyear	—	—	—	—	—	—	—	—	—	27,963	—	—	11	27,963	—
Guadalupe	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Mesa	228	4,017,415	15	—	4,903,890	—	1	77,775	—	3,042,078	—	—	443	12,041,158	—
Paradise Valley	12	1,185,895	—	—	—	—	—	—	—	413,382	—	—	49	1,599,187	—
Phoenix	33	758,491	—	—	—	—	—	—	—	72,937	—	—	51	833,228	—
Scottsdale	837	26,463,789	40	—	23,183,117	—	13	4,598,055	—	29,354,234	—	—	1,414	83,599,195	—
Surprise	123	5,950,980	22	—	9,074,296	—	—	—	—	763,923	—	—	344	15,789,199	—
Tempe	7	23,120	—	—	—	—	—	—	—	1,050	—	—	10	24,180	—
Tolleson	99	3,630,500	14	—	147,300	—	37	1,706,200	—	648,700	—	—	219	6,132,700	—
Uninc. Maricopa Co.	8	7,045	—	—	—	—	—	—	—	—	—	—	8	7,045	—
Wickenburg	869	11,559,520	26	—	3,863,675	—	—	—	—	629,442	—	—	707	16,072,637	—
Youngtown	12	48,000	—	—	—	—	—	—	—	14,450	—	—	3	62,450	—
		10,329	—	—	—	—	—	—	—	7,530	—	—	17	17,869	—

Arizona Building Permits: Monthly Report (Continued)

SEPTEMBER, 1980

CENSUS DIVISION

MOHAVE COUNTY

Kingman City	333	5,240,849	30	958,316	—	243	429,994	606	6,629,159
Kingman Area	34	763,395	3	112,000	—	6	6,966	43	882,361
Lake Havasu City	36	3,789,961	1	32,256	—	28	28,793	65	440,010
Lake Havasu Area	48	1,545,972	7	417,990	—	18	112,152	73	2,077,114
Mohave Valley North	123	1,14,996	15	24,960	—	104	25,416	32	165,302
Mohave Valley South	48	1,431,826	2	277,510	—	30	160,497	242	1,869,843
Dolan Springs	11	710,969	—	91,200	—	12	42,910	80	845,079
Sacramento Valley	18	113,022	—	—	—	22	25,556	23	138,578
Mohave County General	3	146,752	1	2,400	—	4	23,709	40	170,461
NAVAJO COUNTY	122	1,895,556	10	792,622	—	6	3,995	8	40,411
Holbrook	8	74,090	—	—	—	2	158,562	138	2,846,740
Show Low	10	183,714	4	258,570	—	—	38,000	10	112,000
Snowflake	2	N/C	—	—	—	—	—	14	442,284
Taylor	5	69,000	—	—	—	—	—	2	—
Uninc. Navajo Co.	91	1,548,342	4	134,052	—	4	120,562	99	69,000
Winslow	6	20,500	2	400,000	—	—	—	8	1,802,956
PIMA COUNTY	751	27,401,019	40	11,068,590	800,000	424	3,477,116	1,216	42,746,525
Marana	1	N/C	—	—	—	—	—	1	—
Oro Valley	1	90,000	—	—	—	—	—	1	90,000
South Tucson	14	16,150	—	—	—	—	—	15	16,150
Tucson	302	6,681,320	27	8,968,090	800,000	1	2,594,894	528	18,844,314
Uninc. Pima Co.	433	20,613,529	13	2,100,300	—	225	1,082,222	671	23,796,061
PINAL COUNTY	116	1,485,823	8	308,334	—	41	335,478	165	2,125,645
Casa Grande	22	816,429	2	153,974	—	8	41,901	32	1,012,314
Coolidge	25	130,888	—	—	—	2	7,750	27	138,638
Eloy	6	5,757	—	—	—	1	36,700	7	42,457
Florence	2	3,250	1	5,000	—	3	1,375	6	9,625
Kearny	3	2,500	1	20,000	—	1	25,000	5	47,500
Mammoth	1	N/C	—	—	—	—	—	1	—
Superior	4	7,500	—	—	—	—	—	7	9,300
Uninc. Pinal Co.	53	517,699	4	129,360	—	3	1,800	80	866,011
SANTA CRUZ COUNTY	21	791,793	N/R	N/R	N/R	23	218,952	23	805,998
Nogales	—	—	—	—	—	2	14,200	N/R	N/R
Patagonia	1	30,000	—	—	—	1	200	2	30,200
Uninc. Santa Cruz Co.	20	761,798	—	—	—	1	14,000	21	775,798
YAVAPAI COUNTY	295	6,014,002	19	1,028,737	142,000	78	296,945	395	7,481,684
Chino Valley	24	313,940	—	—	—	—	7,500	28	521,240
Clarkdale	5	36,570	—	—	—	—	—	3	56,570
Cottonwood	15	108,383	1	7,000	—	3	2,450	19	117,853
Jerome	—	—	1	6,000	—	—	—	1	6,000
Prescott	48	583,785	6	451,925	—	47	124,069	101	1,159,779
Uninc. Yavapai Co.	144	3,918,477	8	482,500	30,000	24	1,163,126	177	4,594,103
Prescott Valley	61	1,052,847	3	81,312	112,000	—	—	66	1,246,159
YUMA COUNTY	134	3,244,872	6	581,091	—	21	235,902	161	4,061,865
Parker	—	—	1	12,000	—	—	—	1	12,000
Somerton	2	9,800	—	—	—	1	1,000	3	10,800
Uninc. Yuma Co.	78	1,776,446	—	—	—	6	92,220	84	1,868,666
Wellton	—	—	—	—	—	—	—	—	—
Yuma	54	1,458,626	5	569,091	—	14	142,682	73	2,170,399
TOTAL Maricopa County, Sept., 1980	2,269	62,718,136	133	43,165,478	6,926,398	1,526	35,891,987	3,985	148,701,999
TOTAL Maricopa County, Sept., 1979	2,027	44,626,098	170	35,916,731	21,219,928	1,695	31,587,390	3,938	133,550,147
PERCENT CHANGE	12	41	22	20	-67	-10	14	1	12
TOTAL Arizona, Sept., 1980	4,540	118,939,086	272	60,298,824	8,005,398	2,515	41,919,342	7,930	229,163,250
TOTAL Arizona, Sept., 1979	4,699	89,824,258	286	57,582,063	22,559,808	2,911	37,572,018	7,950	207,538,147
PERCENT CHANGE	-3	32	-5	5	-65	-14	12	-7	11

NAVAJO COUNTY

Holbrook	8	74,090	—	—	—	2	158,562	138	2,846,740
Show Low	10	183,714	4	258,570	—	—	38,000	10	112,000
Snowflake	2	N/C	—	—	—	—	—	14	442,284
Taylor	5	69,000	—	—	—	—	—	2	—
Uninc. Navajo Co.	91	1,548,342	4	134,052	—	4	120,562	99	69,000
Winslow	6	20,500	2	400,000	—	—	—	8	1,802,956
PIMA COUNTY	751	27,401,019	40	11,068,590	800,000	424	3,477,116	1,216	42,746,525
Marana	1	N/C	—	—	—	—	—	1	—
Oro Valley	1	90,000	—	—	—	—	—	1	90,000
South Tucson	14	16,150	—	—	—	—	—	15	16,150
Tucson	302	6,681,320	27	8,968,090	800,000	1	2,594,894	528	18,844,314
Uninc. Pima Co.	433	20,613,529	13	2,100,300	—	225	1,082,222	671	23,796,061
PINAL COUNTY	116	1,485,823	8	308,334	—	41	335,478	165	2,125,645
Casa Grande	22	816,429	2	153,974	—	8	41,901	32	1,012,314
Coolidge	25	130,888	—	—	—	2	7,750	27	138,638
Eloy	6	5,757	—	—	—	1	36,700	7	42,457
Florence	2	3,250	1	5,000	—	3	1,375	6	9,625
Kearny	3	2,500	1	20,000	—	1	25,000	5	47,500
Mammoth	1	N/C	—	—	—	—	—	1	—
Superior	4	7,500	—	—	—	—	—	7	9,300
Uninc. Pinal Co.	53	517,699	4	129,360	—	3	1,800	80	866,011
SANTA CRUZ COUNTY	21	791,793	N/R	N/R	N/R	23	218,952	23	805,998
Nogales	—	—	—	—	—	2	14,200	N/R	N/R
Patagonia	1	30,000	—	—	—	1	200	2	30,200
Uninc. Santa Cruz Co.	20	761,798	—	—	—	1	14,000	21	775,798
YAVAPAI COUNTY	295	6,014,002	19	1,028,737	142,000	78	296,945	395	7,481,684
Chino Valley	24	313,940	—	—	—	—	7,500	28	521,240
Clarkdale	5	36,570	—	—	—	—	—	3	56,570
Cottonwood	15	108,383	1	7,000	—	3	2,450	19	117,853
Jerome	—	—	1	6,000	—	—	—	1	6,000
Prescott	48	583,785	6	451,925	—	47	124,069	101	1,159,779
Uninc. Yavapai Co.	144	3,918,477	8	482,500	30,000	24	1,163,126	177	4,594,103
Prescott Valley	61	1,052,847	3	81,312	112,000	—	—	66	1,246,159
YUMA COUNTY	134	3,244,872	6	581,091	—	21	235,902	161	4,061,865
Parker	—	—	1	12,000	—	—	—	1	12,000
Somerton	2	9,800	—	—	—	1	1,000	3	10,800
Uninc. Yuma Co.	78	1,776,446	—	—	—	6	92,220	84	1,868,666
Wellton	—	—	—	—	—	—	—	—	—
Yuma	54	1,458,626	5	569,091	—	14	142,682	73	2,170,399
TOTAL Maricopa County, Sept., 1980	2,269	62,718,136	133	43,165,478	6,926,398	1,526	35,891,987	3,985	148,701,999
TOTAL Maricopa County, Sept., 1979	2,027	44,626,098	170	35,916,731	21,219,928	1,695	31,587,390	3,938	133,550,147
PERCENT CHANGE	12	41	22	20	-67	-10	14	1	12
TOTAL Arizona, Sept., 1980	4,540	118,939,086	272	60,298,824	8,005,398	2,515	41,919,342	7,930	229,163,250
TOTAL Arizona, Sept., 1979	4,699	89,824,258	286	57,582,063	22,559,808	2,911	37,572,018	7,950	207,538,147
PERCENT CHANGE	-3	32	-5	5	-65	-14	12	-7	11

NAVAJO COUNTY

Holbrook	8	74,090	—	—	—	2	158,562	138	2,846,740
Show Low	10	183,714	4	258,570	—	—	38,000	10	112,000
Snowflake	2	N/C	—	—	—	—	—	14	442,284
Taylor	5	69,000	—	—	—	—	—	2	—
Uninc. Navajo Co.	91	1,548,342	4	134,052	—	4	120,562	99	69,000
Winslow	6	20,500	2	400,000	—	—	—	8	1,802,956
PIMA COUNTY	751	27,401,019	40	11,068,590	800,000	424	3,477,116	1,216	42,746,525
Marana	1	N/C	—	—	—	—	—	1	—
Oro Valley	1	90,000	—	—	—	—	—	1	90,000
South Tucson	14	16,150	—	—	—	—	—	15	16,150
Tucson	302	6,681,320	27	8,968,090	800,000	1	2,594,894	528	18,844,314
Uninc. Pima Co.	433	20,613,529	13	2,100,300	—	225	1,082,222	671	23,796,061
PINAL COUNTY	116	1,485,823	8	308,334	—	41	335,478	165	2,125,645
Casa Grande	22	816,429	2	153,974	—	8	41,901	32	1,012,314
Coolidge	25	130,888	—	—	—	2	7,750	27	138,638
Eloy	6	5,757	—	—	—	1	36,700	7	42,457
Florence	2	3,250	1	5,000	—	3	1,375	6	9,625
Kearny	3	2,500	1	20,000	—	1	25,000	5	47,500
Mammoth	1	N/C	—	—	—	—	—	1	—
Superior	4	7,500	—	—	—	—	—	7	9,300
Uninc. Pinal Co.	53	517,699	4	129,360	—	3	1,800	80	866,011
SANTA CRUZ COUNTY	21	791,793	N/R	N/R	N/R	23	218,952	23	805,998
Nogales	—	—	—	—	—	2	14,200	N/R	N/R
Patagonia	1	30,000	—	—	—	1	200	2	30,200
Uninc. Santa Cruz Co.	20	761,798	—	—	—	1	14,000	21	775,798
YAVAPAI COUNTY	295	6,014,002	19	1,028,737	142,000	78	296,945	395	7,481,684
Chino Valley	24	313,940	—	—	—	—	7,500	28	521,240
Clarkdale	5	36,570	—	—	—	—	—	3	56,570
Cottonwood	15	108,383	1	7,000	—	3	2,450	19	117,853
Jerome	—	—	1	6,000	—	—	—	1	6,000
Prescott	48	583,785	6	451,925	—	47	124,069	101	1,159,779
Uninc. Yavapai Co.	144	3,918,477	8	482,500	30,000	24	1,163,126	177	4,5

Arizona New Housing Starts: Monthly Report

SEPTEMBER, 1980

BUILDING PERMITS ISSUED

	1* Family	3-4 Duplex	5 or Families	More Units	Housing Units
APACHE COUNTY	17	—	—	—	17
Eagar	3	—	—	—	3
St. Johns	8	—	—	—	8
Springerville	3	—	—	—	3
Uninc. Apache Co.	3	—	—	—	3
COCHISE COUNTY	68	—	—	—	68
Benson	2	—	—	—	2
Bisbee	—	—	—	—	—
Douglas	1	—	—	—	1
Huachuca City	—	—	—	—	—
Sierra Vista	20	—	—	—	20
Tombstone	N/R	N/R	N/R	N/R	N/R
Uninc. Cochise Co.	42	—	—	—	42
Willcox	3	—	—	—	3
COCONINO COUNTY	127	6	—	1	149
Flagstaff	20	6	—	1	42
Fredonia	1	—	—	—	1
Page	15	—	—	—	15
Uninc. Coconino Co.	89	—	—	—	89
Williams	2	—	—	—	2
GILA COUNTY	63	—	—	—	63
Globe	2	—	—	—	2
Hayden	—	—	—	—	—
Miami	—	—	—	—	—
Payson	18	—	—	—	18
Uninc. Gila Co.	43	—	—	—	43
GRAHAM COUNTY	24	—	—	—	24
Pima	1	—	—	—	1
Safford	1	—	—	—	1
Thatcher	2	—	—	—	2
Uninc. Graham Co.	20	—	—	—	20
GREENLEE COUNTY	—	—	—	—	—
Clifton	—	—	—	—	—
Duncan	—	—	—	—	—
Uninc. Greenlee Co.	—	—	—	—	—
MARICOPA COUNTY	1,631	12	11	36	2,842
Avondale	4	—	—	—	4
Buckeye	1	—	—	—	1
Chandler	140	1	—	—	142
El Mirage	N/R	N/R	N/R	N/R	N/R
Gila Bend	—	—	—	—	—
Gilbert	1	—	—	—	1
Glendale	132	—	—	3	160
Goodyear	—	—	—	—	—
Guadalupe	—	—	—	—	—
Mesa	188	9	1	6	388
Paradise Valley	9	—	—	—	9
Peoria	29	—	—	—	29
Phoenix	567	2	4	21	1,450
Scottsdale	90	—	—	6	164
Surprise	2	—	—	—	2
Tempe	77	—	1	—	81
Tolleson	—	—	—	—	—
Uninc. Maricopa Co.	390	—	5	—	410
Wickenburg	1	—	—	—	1
Youngtown	—	—	—	—	—

BUILDING PERMITS ISSUED

	1* Family	3-4 Duplex	5 or Families	More Units	Housing Units
MOHAVE COUNTY	195	7	1	3	220
Kingman City	21	—	—	—	21
Kingman Area	23	—	1	—	27
Lake Havasu City	36	—	—	3	51
Lake Havasu Area	8	—	—	—	8
Mohave Valley North	58	2	—	—	64
Mohave Valley South	31	—	—	—	31
Dolan Springs	7	—	—	—	7
Sacramento Valley	8	—	—	—	8
Mohave Co. General	3	—	—	—	3
NAVAJO COUNTY	69	—	—	2	89
Holbrook	1	—	—	—	1
Show Low	10	—	—	—	10
Snowflake	2	—	—	—	2
Taylor	2	—	—	—	2
Uninc. Navajo Co.	53	—	—	—	53
Winslow	1	—	—	2	21
PIMA COUNTY	527	6	—	7	649
Marana	—	—	—	—	—
Oro Valley	1	—	—	—	1
South Tucson	—	—	—	—	—
Tucson	184	6	—	7	306
Uninc. Pima Co.	342	—	—	—	342
PINAL COUNTY	61	—	4	—	76
Casa Grande	13	—	2	—	20
Coolidge	8	—	—	—	8
Eloy	—	—	—	—	—
Florence	—	—	—	—	—
Kearny	—	—	—	—	—
Mammoth	—	—	—	—	—
Superior	1	—	—	—	1
Uninc. Pinal Co.	39	—	2	—	47
SANTA CRUZ COUNTY	20	—	—	—	20
Nogales	N/R	N/R	N/R	N/R	N/R
Paragonia	1	—	—	—	1
Uninc. Santa Cruz Co.	19	—	—	—	19
YAVAPAI COUNTY	190	2	1	2	214
Chino Valley	14	—	—	—	14
Clarkdale	1	—	—	—	1
Cottonwood	4	—	—	—	4
Jerome	—	—	—	—	—
Prescott	16	—	—	1	26
Uninc. Yavapai Co.	108	—	—	1	115
Prescott Valley**	47	2	1	—	54
YUMA COUNTY	84	1	4	1	108
Parker	—	—	—	—	—
Somerton	—	—	—	—	—
Uninc. Yuma Co.	58	1	—	—	60
Wellton	—	—	—	—	—
Yuma	26	—	4	1	48
TOTAL, Maricopa Co., September, 1980	1,631	12	11	36	2,842
TOTAL, Maricopa Co., September, 1979	1,362	5	18	52	2,639
PERCENT CHANGE	20	140	-39	-31	8
TOTAL, Arizona, September, 1980	3,076	30	21	52	4,539
TOTAL, Arizona, September, 1979	2,936	25	26	67	5,173
PERCENT CHANGE	5	20	-19	-22	-12

*Includes mobil homes

**Prescott Valley's new housing starts includes July, 1980

N/R: No report; data for this month will be combined with data reported for the following month.

Maricopa County Retail Food Prices

OCTOBER, 1980

Retail food prices in Maricopa County rose 0.3 percent in October; this gain follows a 1.9 percent increase in September.

The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University. Cosponsor of the study is Valley National Bank. The October index of 250.2 indicates that shoppers would now have to pay \$25.02 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$22.50 one year ago. The October, 1980, index reflects an 11.2 percent increase over the October, 1979, value.

The slight increase in the October index was due to increases in *Dairy Products* (1.6 percent), *Cereals and Bakery Products* (1.3 percent), and *Other Foods* (0.4 percent). Offsetting these gains was a drop in *Fruits and Vegetables* (-1.4 percent), while *Meats, Poultry, Fish, and Eggs* remained unchanged.

Prices of almost all items in the *Dairy Products* subgroup were up this month. Fresh milk and cream rose 2.6 percent, followed by cheese (2.2 percent), and ice cream and related products (2.2 percent). Prices also climbed in most categories in *Cereals and Bakery Products*: fresh biscuits, rolls, and muffins increased 4.6 percent, flour and prepared flour mixes 3.3 percent, and white bread 2.0 percent.

Price changes in *Other Foods* were mixed, resulting in only a small overall increase. Falling prices for coffee beans were reflected in decreased prices for roasted coffee (-6.1 percent), as well as freeze-dried and instant coffee (-2.7 percent). These reductions were counteracted by advancing prices for nuts, potato chips, and other snacks (5.7 percent) and sugar and artificial sweeteners (3.4 percent).

Sharp declines in apples (-36.0 percent), bananas (-11.1 percent), and potatoes (-5.2 percent) partially accounted for the lowered index value for *Fruits and Vegetables*. These decreases were matched by hikes in tomatoes (10.9 percent) and oranges (7.7 percent).

Although the overall index for *Meats, Poultry, Fish, and Eggs* remained unchanged during October, several minor changes occurred in various categories. Most pork prices were up, notably canned and noncanned ham (4.0 percent and 4.8 percent respectively). Also rising were prices for lunchmeat (5.0 percent), fresh and frozen fish and shellfish (4.3 percent), and frankfurters (2.4 percent). These increases were equally offset by decreases in fresh whole chicken prices (-3.4 percent), followed by sirloin steak (-2.6 percent), bacon (-1.9 percent), and ground beef other than canned (-1.5 percent).

A comparison of July *Food Consumed at Home* for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a food group in July, 1980, (obtainable for \$10.00 at 1967 average prices) were \$24.10 in Maricopa County, \$24.87 in Los Angeles-Long Beach, \$25.20 in San Francisco-Oakland, \$25.32 in Chicago-Northwestern Indiana, and averaged \$25.15 in the United States.

INDEX FOR FOOD CONSUMED AT HOME
(Average 1967 = 100 percent)

Group	Maricopa County Sept. '80 ^a	Maricopa County June '80 ^b	United States* June '80	Los Angeles Long Beach* June '80	San Francisco- Oakland* June '80	Chicago North- western Indiana* June '80
Food Consumed at Home	250.2	241.0	251.5	248.7	252.0	253.2
Cereals and Bakery Products	234.6	230.3	247.8	255.4	255.1	255.7
Meats, Poultry, Fish, and Eggs	258.3	244.0	236.7	239.0	247.2	243.2
Dairy Products	217.1	213.0	228.6	221.3	221.3	225.1
Fruits and Vegetables	236.6	225.0	253.9	231.7	235.1	256.1
Other Foods Consumed at Home	276.8	269.4	304.3	300.4	310.0	304.8

*Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington D.C.

^aMaricopa County food prices are reported for the month closest to publication.

^bComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

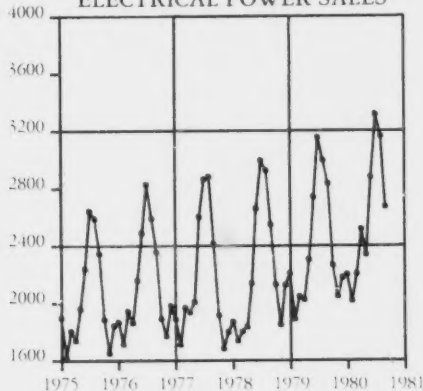
Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Arizona Economic Indicators

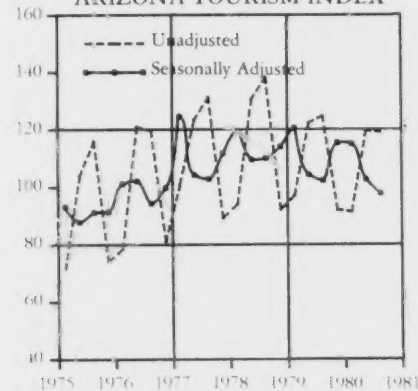
Millions
KWH

ELECTRICAL POWER SALES



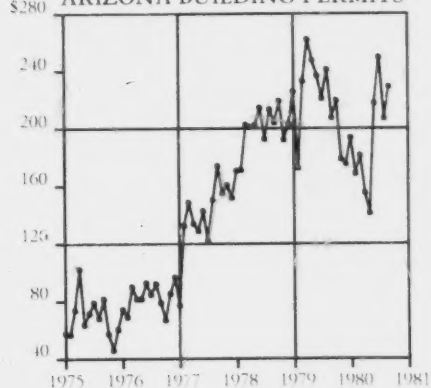
1976=100

ARIZONA TOURISM INDEX



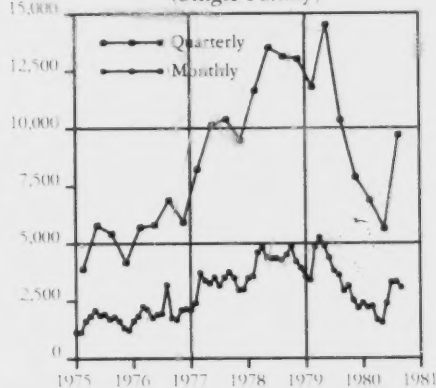
Millions

ARIZONA BUILDING PERMITS



Number

ARIZONA NEW HOUSING STARTS (Single Family)



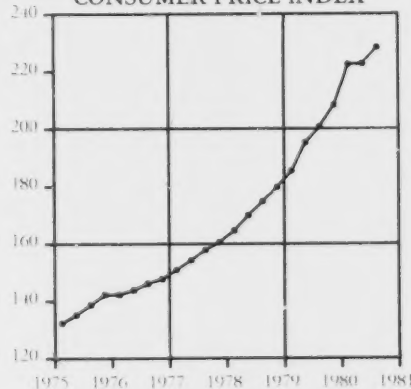
1967=100

METROPOLITAN PHOENIX FOOD PRICE INDEX



1969=100

METROPOLITAN PHOENIX CONSUMER PRICE INDEX



Source: All data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University.



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Report to The Reader

Each December, several College of Business Administration faculty members from Arizona State University and representatives from the business community forecast national, state, and local economic activity.

The analyses are presented at the Economic Forecast Luncheon, held this year on December 11. Over 1,350 people attended the event, which is in its nineteenth year. As in years past, the December issue of *Arizona Business* features the presentations of the speakers.

According to Dr. John Cochran, ASU Professor of Economics, "Most of the economic policies of the new administration will be geared toward long run goals of reducing inflation and increasing economic growth; therefore it would be unrealistic to expect immediate effects in 1981." He adds, however, that "particular tax cuts or sharp cuts in existing government programs will have considerable impact on the 1982 budget."

Dr. Richard Winkelman, Associate Professor of Economics, reports that "total real personal income in Arizona can be expected to rise, but as a result of inflation, real per capita income will fall for the third straight year." However, he says, "the rate of decline will be much less than in 1980."

The panel of community representatives reported similar forecasts. B. Paul Jones, of the Valley National Bank, said, "The scheduled increases in social security taxes and personal income taxes through 'bracket creep' will further impair family spendable incomes.... More of family incomes will have to be dedicated to necessities."

Jackie Pettycrew of Phoenix Newspapers Inc. reported that residential housing can be expected to shift back toward single-family dwellings. John R. Welty of Motorola indicated that the outlook for manufacturing is good with moderate increases expected by nearly all companies surveyed.

This year for the first time, those attending the luncheon received a booklet entitled *1981 Arizona Economic Outlook*, which was prepared by the ASU Forecasting Group. The booklet shows the following forecasts for six key economic indicators:

- *Personal Income:* Up 13 percent to \$26 billion
- *Employment:* Up 3 percent to 1.02 million
- *Population:* Up 2.2 percent to 2.8 million
- *Consumer Price Index:* Up 12 percent
- *Retail Sales:* Up 12.7 percent to \$15.5 billion
- *Construction:* Up 12 percent to 92,000 permits

National Economic Outlook for 1981: A Year in Transition

JOHN A. COCHRAN

It has now been more than a month since Ronald Reagan became President-elect in a national election that produced a Republican majority in the Senate and a greatly reduced Democratic majority in the House. The new conservative tide will undoubtedly result in new economic policies at the federal level with subsequent impact on the overall economy. However, most of these new economic policies will be geared toward long run goals of reducing inflation and increasing economic growth; therefore, it would be unrealistic to expect an immediate dramatic effect on the economy in 1981. Budget goals for this fiscal year, which began on October 1, were determined well before the election and were finally validated by the lame duck Congress after the election. The new President is not inaugurated until January 20, 1981, and it will be difficult for him to have much impact on the present fiscal year, which runs through September, 1981.

The national economic outlook for 1981 has already been basically shaped by the economic forces of 1980. Little or no growth is expected in the first half of 1981, but a real economic upswing can be expected about midyear with a strong economic advance in 1982. This report was one of the presentations at the annual ASU Economic Forecast Luncheon on December 11.

John A. Cochran is Professor of Economics in the College of Business Administration, Arizona State University.

Policy in fiscal year 1982, however, will undoubtedly be shaped by the new administration, even though budgetary planning is already well advanced for that year. Particular tax cuts, for example, or sharp cuts in existing government programs will undoubtedly have considerable impact on the 1982 budget. Even here, however, months of debate in Congress, possibly involving some political compromises, are likely before the new 1982 budget is determined. In short, the economic outlook for 1981 will be largely determined by economic forces already at work in 1980. Subsequent years, of course, are quite a different matter.

At present, we have a very strong economy that is being hobbled by high inflation and high interest rates. For 1981, therefore, Americans can expect a continuation of the slow economic growth of late 1980. Real gross national product (GNP) next year should rise only about 1 percent. The national inflation rate should fall somewhat from the more than 13 percent rate at the retail level in 1980 to about 10 percent for 1981. Growth in labor productivity, which was negative in 1979 and the first half of 1980, should show a modest positive growth, which began in the third quarter of 1980. During 1980, interest rates rose sharply, fell sharply, and then rose again; they should fall somewhat in the first half of 1981 but then may be back up again in the second half of 1981. If the rate of inflation falls slightly in 1981, as expected, then the average level of interest rates next year should be somewhat lower than that of 1980.

The nation's unemployment rate should increase in 1981, since the expected modest growth in real output

will not be enough to provide new jobs for all the new job seekers next year. The labor force should increase about 1.6 million in 1981. American exports, particularly agricultural exports, should continue to show gains next year. Nevertheless, recessions or slow economic growth in many other industrial nations will make export growth next year somewhat harder than this year.

THE PAST YEAR

The year 1980 brought the recession that economists had been expecting, but in many ways it was a strange and atypical recession. Economic growth was very slow in the first quarter of 1980 and declined very sharply in the second quarter — the sharpest decline in real terms (9.6 percent) since World War II. A mild recovery of 1 percent in real terms occurred in the third quarter, marked by a rebound in interest rates, which in turn slowed consumer spending on new houses and new cars. The fourth quarter continued to show a mild upturn in economic activity. The typical postwar recession has been marked by a V-shaped decline and recovery, and above all, by a decline in real output for two quarters or more. But almost nothing about this recession has been typical, except that housing and automobile sales have both been adversely affected.

One of the strangest things about the past year was the gyrations in the money and capital markets. Interest rates now are nearly as high as they were last spring, but this similarity masks an enormous roller-coaster ride in the financial markets in 1979 to 1980.

It all began with the Saturday Night Special of October 6, 1979, when the Federal Reserve announced that henceforth it would put its greatest emphasis on controlling the rate of growth in monetary aggregates and would allow interest rates to be determined largely by market forces. A similar statement was made several times before in the 1970s, but this time the Federal Reserve really seemed to mean it.

The escalating inflation rates of late 1979 exploded into 18 percent annualized rates of increase in the Consumer Price Index in the first quarter of 1980. Market interest rates responded by escalating too, since lenders want a positive real rate of interest. To get this, the nominal or market rate of interest must be higher than the actual and expected rate of inflation. The prime rate — from which all other bank interest rates are scaled upwards — hit 20 percent in early April before falling sharply to 10½ percent in June, after which it rose again to 20 percent by December 10. All other market interest rates experienced a similar oscillation. Such

sharp fluctuations in the cost of borrowing make it difficult for would-be borrowers, or lenders, to plan for the future, however.

By late December, money market yields are expected to have peaked and some declines may even be noted with further declines expected in early 1981. The major economic reason for this expected peaking in interest rates seems to be that, although the economy did rebound somewhat in the third and fourth quarters, further recovery seems likely to be slow and less vigorous than most post-war upswings after economic recessions.

One reason is that a number of European countries seem about ready to go into the recession from which the United States is slowly recovering. A slowdown in foreign economic growth portends a slower rate of growth of United States exports, which in turn would not help to spark our economic recovery. Britain, Germany, the Netherlands, and France — the big four United States customers in Europe — are all experiencing weaker economic activity in late 1980 which is expected to continue into early 1981.

Interest rate increases, of course, are caused not only by an upturn in economic activity but also by inflationary expectations. Because of this, it is somewhat sobering to realize that a number of large corporate borrowers recently have been willing to pay 20 percent interest or more for short-term funds. This suggests that they are concerned about the prospects of further inflation. Many consumers, on the other hand, are not able to pay the current high interest rates and have been squeezed out of the housing market and the market for big ticket durable goods, such as automobiles.

THE CONSUMER IN 1981

The American consumer was causing concern among economic analysts in late 1980. In the first place, the economic upswing of April, 1975, to early 1980, was marked by strong consumer spending, which was financed in part by rising consumer debt. Such spending was particularly strong for various consumer durables, including foreign and domestic automobiles, and items needed to furnish new houses. Such durables are typically financed by consumer borrowing and the last economic upturn was no exception.

All of this came to an abrupt end after March 14, 1980, when the Federal Reserve announced stringent restrictions on new consumer borrowing. Apparently some consumers thought they could not borrow at all; at any rate they had already accumulated a very large amount of

debt, so they repaid outstanding debts at a record rate of \$9 billion in the second quarter of 1980, which meant that consumer spending in the same period fell sharply. The improved liquidity of households and the sharp decline in interest rates after early April did lead the consumer back to the marketplace, particularly the housing market. Nevertheless, a rebound of interest rates, continued inflation, and uncertainty about the future prospects for the economy led to only modest increases in consumer spending in the fall of 1980.

The key factor of concern among economists in analyzing future consumer spending trends is the direct and indirect effect of high inflation. Despite the sharp decline in consumer spending and the sharp decline in real output in the second quarter of 1980, little relief in inflation was noted. The basic rate of inflation, in fact, now seems to be in the 9 to 10 percent range. This means that firms are likely to take any opportunity of increased sales to widen profit spreads, which have often been squeezed by inflation. Even in the face of weak sales, automobile manufacturers in the fall of 1980 typically increased their list prices; this was true for both domestic autos and foreign imports. Restaurant prices are increasing, as is the price of food at the wholesale and retail level. Energy prices seem determined to continue to climb, despite any temporary leveling off. Airline and other transportation costs are still rising.

In the face of continuing inflation at both the retail and the producer level, dollar wage and salary payments have risen at a slower rate so that real income available for consumer spending has actually declined throughout 1980. In dollar terms, consumer spending has risen for six months in a row, although in some months, price increases have led to a lower volume of unit sales. Consumer spending was partly financed by a decline in the savings rate out of disposable personal income. For example, it fell from 5 percent in June to 4.6 percent in August. Both of these rates, incidentally, are well below long-run "normal" savings rates averaging around 7 percent. Despite large debt repayments in the second quarter, the consumer is still carrying a large debt burden from the splurge of consumer spending from April, 1975, to early 1980.

It seems unlikely that the earlier sharp rises in consumer spending will be repeated in early 1981. By mid-1981, however, some economic uncertainties may have been removed, the inflation rate may be somewhat lower than in 1980, and any improvements in real income, e.g., by actual or prospective tax cuts, might be translated rather quickly into higher rates of consumer spending. Spending on big ticket items, like automobiles

and new housing, would be further stimulated if interest rates were lower.

HOUSING STARTS

Spending on new housing is the most important expenditure decision made by the household. Since most of the new housing cost is financed by a mortgage, the interest rate on that mortgage affects the size of monthly payments and thus the ability of the household to make a new housing purchase. The sensitivity of new housing starts to interest rates has led to dramatic fluctuations in residential construction in recent decades whenever interest rates rise or fall sharply.

In the second half of the 1960s, when our present inflationary period began, housing starts in the United States never got higher than 1.5 million per year; but in the early 1970s — most notably in 1971, 1972, and 1973 — housing starts ran at 2 million or more a year. In 1974 and 1975, however, which was a period of severe credit restraint by the Federal Reserve and correspondingly sharply rising interest rates, housing starts fell to 1.3 million and then to 1.1 million. Recovery in residential construction due to falling interest rates resulted in 1.5 million housing starts in 1976, 1.9 million starts in 1977, and 2 million units again in 1978.

Lower interest rates were not the only reason for rising housing starts, of course. Other factors included an increase in the rate of new family formation due to many people of the postwar baby boom coming of age, an increase in families with two wage earners, as more and more women moved into the work force, and, finally, an increase in inflationary expectations in the late 1970s. In many respects, the latter proved to be a self-fulfilling prophecy since the higher demand for homes led to higher prices.

In 1979 and 1980, however, the trend in housing starts was downward. Some 1.7 million houses were started in 1979, which was clearly down from the 2 million level of 1978. Once again, rising interest rates seemed to be the main culprit. Interest rates continued to soar in the first quarter of 1980, and further choked off residential building, and in the second quarter a sharp plunge of 9.6 percent in real GNP led to a corresponding decline in the demand for new housing. Housing starts, which began in 1980 at a seasonally adjusted annual rate of 1.4 million in January, plunged to a low of 906,000 units in May.

Interest rates peaked in early April and then fell for several months thereafter, sparking renewed interest in housing expenditures. But housing starts, which bounced up to an annual rate of 1.4 million in the third quarter,

were sagging somewhat in the fourth quarter and were likely to be about 1 million or less in that quarter. Interest rates for new mortgages, which had fallen to about 11½ percent in the summer, were over 15 percent by late fall, and new housing sales fell in each of three months as a result.

Some recovery in housing starts is generally expected for 1981 since interest rates are expected to decline somewhat. Furthermore, demographic factors still favor rising housing starts. Nevertheless, the expected level of 1.5 to 1.6 million new housing starts in 1981 still seems somewhat anemic compared to the robust level of 2 million new starts a decade earlier. The expected slow revival of residential construction fits in with the overall picture of a slowly reviving economy in 1981.

CAPITAL SPENDING IN 1981

New residential construction is included in the Department of Commerce data on Gross Private Domestic Investment and the woes affecting the housing market, particularly due to high and rising interest rates have already been noted. In turning to business expenditures on new plants and equipment, and the accumulation of inventories (which are the other parts of Gross Private Domestic Investment) economic woes can be noted here, too. High and rising interest rates affect not only consumers intending to make large durable purchases, like automobiles and new houses, but also businesses wishing to make capital purchases.

Internal funds — either retained earnings or depreciation allowances — help provide the bulk of the funds needed for new capital purchases, but a significant part of the funds must be secured externally, especially in the form of new borrowings from banks or in the capital markets. For much of 1980, the capital markets have been a difficult source of funds. In the first quarter of 1980, these markets almost dried up. Many bond flotations deferred in the first quarter did come to market in the second quarter and helped restore reduced corporate liquidity, pay off bank loans and finance new or ongoing capital projects. In the third and fourth quarters, however, more projected bond flotations were deferred again. One of the fundamental problems in borrowing in financial markets is the gigantic appetite of the federal government for borrowed funds owing to annual deficits as high as \$60 billion year after year. The federal government will get what it needs, even if it has to crowd out private borrowers by sharply increasing interest rates.

Secondly, in looking forward to early 1981, many business firms may be worried about excess capacity

brought about by sluggish consumer spending and some excess inventories, rather than being concerned about tight production schedules and a long lag in getting orders filled from suppliers, which typically spur increased capital spending. Furthermore, high inflation rates make it difficult to do the kind of rational projections of costs and returns necessary to make large expenditures for increasing production capacity. Much uncertainty still exists in the economy, which does not encourage large increases in capital spending. Nevertheless, real capital spending this year should match that of last year. The second half of 1980 will record a 3.5 percent decline in real capital spending, while the first half of 1981 should show a 2.5 percent increase. These data come from a survey just released by the Department of Commerce. Furthermore, if the inflation rate falls in the first half of 1981, if consumer spending revives, and if the expected large cut on business taxes and improved depreciation allowances occurs, then capital spending should revive strongly in late 1981 and 1982. Although capital spending in current dollars should show increases over 1980, a small decline in real, or inflation-adjusted, dollars may occur.

FISCAL POLICY IN 1981

As previously noted, part of the reason interest rates have risen to such high levels again late in 1980 is the continuing large appetite of the federal government for borrowed funds because of chronically large budget deficits. It is true that the budget for fiscal year 1981 contains a smaller deficit than that actually experienced in fiscal year 1980; the deficit in 1980 was around \$59 billion and that contemplated in the new budget is only \$27.4 billion. However, forecast budget deficits often turn out to be smaller than the actual deficit recorded for the year and 1981 will probably be no exception.

Taxes will certainly go up January 1, 1981, as both the tax rate and the income base for Social Security taxes go up sharply. However, both personal income taxes and business taxes are probably going to be cut by the new Congress next year. Furthermore, defense spending in the new fiscal year was authorized at \$161 billion by Congress, which compared with only \$117.7 billion as recently as fiscal year 1979, while President-elect Reagan promises still larger amounts of defense spending. Simultaneous tax cuts along with increased military spending, unless fully offset by cuts in government nondefense spending, promise to increase the budget deficit, if not in fiscal year 1981 then almost certainly in fiscal year 1982. Any increased budget deficit would renew pressures on the money and capital markets and

could lead to higher interest rates again late in 1981 after a decline in such rates early in 1981.

THE REAGAN ECONOMIC STRATEGY

In the nearly half a century since Franklin D. Roosevelt was elected in November, 1932, and inaugurated on March 4, 1933, the clear trend in the United States has been toward a much larger role of the federal government. As a consequence, the relative role of the state and local governments has diminished and the economic system has had to bear an increasing tax burden, as well as numerous and sometimes conflicting federal regulations. President-elect Reagan has promised that he will reverse this trend. A new federalism will be installed, whereby many of the functions, responsibilities, and even tax sources, will be relinquished by the federal government to the states and localities. This would mean a cut in government spending.

The philosophy of the new President also includes the desirability — and even necessity — of cutting both personal and business taxes. President-elect Reagan has embraced the Kemp-Roth tax proposal, which calls for a 30 percent cut in tax rates over a three-year period, which will hopefully increase incentives to work and produce, as well as provide more savings.

On the other hand, special tax incentives should be provided for business firms in order to increase real investment. Real investment is an increase in the stock of capital goods and leads to a subsequent increase in the production of goods and services. If real investment is increased, the rate of economic growth will rise, which means that there will be more jobs as well as increased real output. An increase in real investment should also result in more worker productivity, which will help to reduce inflationary pressures. From one point of view, inflation can simply be regarded as a much higher growth in money wages than in worker productivity; but from another point of view, it can be viewed as resulting from large — and often growing — budget deficits and too large an increase in the money supply by the Federal Reserve.

The economic strategy of the new administration is to develop new long-term economic goals, which will be fundamentally different from the last fifty years. Basic reliance is to be placed on the productive abilities of the market system with the individual determinations within that market discipline. It is not clear whether four years will be long enough to reverse the previous economic and political trends. Not only are there now well-established interest groups, who clearly benefit from various government programs (as well as other groups

who regard themselves as being harmed by such programs), but also the United States is much more involved with the rest of the world than it was half a century ago. The accelerating, and sometimes double-digit, inflation of the last fifteen years was originally a result of increasing escalation of the Vietnam War as well as increased welfare programs at home from the Great Society approach of Lyndon Johnson.

After the United States left Vietnam in 1973, the OPEC nations began the series of oil price increases which still have not stopped, and provide inflationary pressures from abroad in addition to domestic inflationary pressures. Besides the United States, many other countries have experienced double-digit inflation in recent years, which is partly exported to countries heavily involved in foreign trade. Some, like Great Britain, have rates that are often double the annual rates of inflation in the United States, while other countries have even experienced triple-digit inflation, i.e., inflation rates of 100 percent or more each year.

Added to the difficulties of reducing inflationary pressures, President-elect Reagan proposes sharp increases in military expenditures. However, increased military expenditures, along with the sharp cuts in income taxes, will surely increase the budget deficit unless sharp cuts in government expenditures for nonmilitary purposes, particularly in transfer payments to individuals and state and local governments, can be achieved at the same time. In the long run, such an economic strategy will likely increase economic growth and productivity but in the short run it could lead to more inflation.

CONCLUSION

As indicated at the beginning of this article, the landslide victory on November 4 of Ronald Reagan will not significantly affect the economic outlook for 1981, which has already been basically determined by economic forces at work in 1980. In general, little or no growth is expected in the first half of 1981, followed by a real economic upswing about midyear. This could translate into a strong economic advance in 1982. Beyond 1982 and at least until early 1985 will be Reagan years, and the economic outlook in those years will be greatly influenced by the economic policies of the new administration — not only the economic philosophy of the new administration but also the timing of the new policies.

The new administration is expected to be much more consistent and persistent in its policies than the outgoing administration. A favorable business climate of opinion in Washington is expected and it is hoped that the new administration will succeed in its announced new goals.

The Arizona Economic Scene: Expectations for 1981

RICHARD D. WINKELMAN

On the surface, 1980 was a good year for the Arizona economy, but much of the gain was illusory and was offset by rampant inflation. For the second straight year, there was a decline in real per capita income. Much of this will be reversed in 1981. Inflation will continue to hurt us, but hopefully, not quite as badly as it did in 1980.

The 1981 forecast for Arizona is in two parts. The first part stresses the values for key indicators and their rates of change, recorded in Tables 1 and 2. These key indicators, are total and per capita income expressed in both current and constant dollars, population, rate of unemployment, the Metropolitan Phoenix Consumer Price Index, and the volume of retail sales in both current and constant dollars.

The second part discusses several broad sectors of the Arizona economy and the role they will play in determining the value of the key indicators. For analytical

Overall, Arizona will continue a slow rate of recovery from the 1980 recession, but inflation will continue to stifle the real level of economic activity. This article discusses the expectations in key indicators and the role of various sectors of the Arizona economy in determining the state's future. This report was one of the presentations at the annual ASU Economic Forecast Luncheon on December 11.

Richard D. Winkelman is Associate Professor of Economics in the College of Business Administration at Arizona State University.

convenience the sectors are divided into two groups. The first group is referred to as *basic* since much of the output of these basic sectors is sold outside Arizona. Given the small local market, it is obvious that Arizona's prosperity rests on the ability of these basic sectors to sell their output outside of Arizona. These basic sectors include mining, manufacturing, agriculture, and tourism. Not all of the output of these sectors is sold outside of Arizona, but the largest proportion is.

The second group is the *induced* sectors, a term which implies that they depend on the success of the basic sectors in selling their output and thereby determining the level of employment and activity in the induced sectors. These induced sectors are construction; transportation, communications, and public utilities; finance, insurance, and real estate; wholesale and retail trade; various general services; and government.

Not all of the employment and sales of the induced sectors are the result of activity in the basic sectors. Some portion of each induced sector is basic. For example, part of government employment is generated by forces outside of Arizona. Parts of the service sector (restaurants, gasoline sales, etc.) are a direct result of the tourist trade. Therefore, that part of their activity is properly part of tourism when for example, some part of their business represents sales to non-Arizonans in the same sense that Arizona cotton may be sold to a Hong Kong textile firm.

Before discussing the key indicators and the sectors, it is important to specify the principal assumption on

TABLE 1

THE ARIZONA ECONOMY:
VALUES OF KEY INDICATORS, 1978-1981

<i>Key Indicators</i>	<i>1978 Actual</i>	<i>1979 Actual</i>	<i>1980 Forecast</i>	<i>1980 Estimated</i>	<i>1981 Forecast</i>
Personal Income					
Current dollars (000,000)	17,586	20,637	24,570	23,000	26,000
Per capita	6,905	7,844	9,020	8,520	9,420
1969 dollars (000,000)	10,210	10,510	11,370	10,180	10,280
Per capita	4,010	3,990	4,170	3,770	3,720
Population (000)	2,547	2,631	2,725	2,700	2,760
Unemployment rate (percentage)	6.1	5.4	6.5	6.5	6.0
Metropolitan Phoenix CPI	172.2	196.6	216.0	226.0	253.0
Retail sales					
Current dollars (000,000)	10,760	12,740	15,400	13,750	15,500
1969 dollars (000,000)	6,250	6,480	7,130	6,080	6,130

Sources: Prepared from data provided by the U.S. Department of Commerce; Arizona Department of Economic Security; Valley National Bank; and the Bureau of Business and Economic Research, Arizona State University.

TABLE 2

THE ARIZONA ECONOMY:
PERCENTAGE RATES OF CHANGE IN KEY INDICATORS
1978-1981

	$\frac{1979 \text{ Actual}}{1978 \text{ Actual}}$	$\frac{1980 \text{ Forecast}}{1979 \text{ Estimated}}$	$\frac{1980 \text{ Estimated}}{1979 \text{ Actual}}$	$\frac{1981 \text{ Forecast}}{1980 \text{ Estimated}}$
Personal Income				
Current dollars	17.4	17.9	11.5	13.0
Per capita	13.6	13.1	8.6	10.6
1969 dollars	3.0	5.4	(3.1)	1.0
per capita	(0.5)	1.8	(5.5)	(1.3)
Population	3.3	3.5	2.6	2.2
Metropolitan Phoenix CPI	14.2	11.0	15.0	12.0
Retail sales				
Current dollars	18.4	18.3	7.9	12.7
1969 dollars	3.7	6.6	(6.2)	0.8

Source: All percentage rates of change calculated from Table 1 except 1980 Forecast column which was reported one year ago.

which this forecast of Arizona's economic activity is made — that the national economy will behave in 1981 as indicated by the preceding national forecast.

KEY INDICATORS

These indicators are the readily apparent measures of economic well-being. The levels attained by these indicators in 1978 and 1979, along with their estimated values for 1980, and the forecast values for 1981 are indicated in Table 1. The percentage changes in these indicators over the same time frame are given in Table 2.

Personal Income

Personal income serves as an excellent indicator of a state's economic progress, especially when corrected for population change via the calculation of per capita income and when corrected for inflation via application of the Consumer Price Index. The 1978 and 1979 data are a matter of record. The first column for 1980 shows the forecast for personal income made one year ago. The second 1980 column shows the current estimate for personal income based on data available over the first three quarters of 1980. The last column of Table 1 indicates the 1981 forecast value for personal income.

Based on the current estimate, personal income in 1980 will have increased about \$2.4 billion or by 11.5 percent over 1979. This falls short of the 1980 forecast by about \$1.6 billion. Correspondingly, per capita income, estimated at \$8,520 also fell short of the 1980 forecast. Total personal income and per capita income in constant dollar terms also fell short of what was forecast. In fact, real personal income and real per capita income declined by 3.1 percent and 5.5 percent respectively. This was the third year in a row during which real per capita income declined. In general, this may be attributed to the 1980 recession which was a bit more severe than anticipated.

For 1980, the ASU forecasting model suggests that personal income will increase by 13 percent in current dollars, from \$23 billion in 1980 to \$26 billion in 1981. Per capita income in current dollars will increase by 10.6 percent to \$9,420. However, because of anticipated increases in the local Consumer Price Index, personal income in constant 1969 dollars will only increase by 1 percent and real per capita income will once again decline, this time by 1.3 percent.

Metropolitan Phoenix CPI

Inflation continues to be a serious problem for the nation and even more so for the Arizona economy. The Arizona State University forecasting model uses the Phoenix Consumer Price Index as a proxy for the state. Based on the first three quarters of 1980, the Phoenix CPI should average 226 for the year. This is ten full points above the 216 index forecast one year ago, which resulted from an anticipated 11 percent inflation over 1980. In fact, however, the final inflation figure for 1980 will be about 15 percent. The inflation rate is a variable that has been consistently underforecasted. The 15 percent actual as opposed to the 11 percent forecasted rate of inflation accounts for much of the 5.5 percent decline in real per capita income. The inflation outlook for 1981 in the state is again very sanguine. The forecasting model suggests only a 12 percent inflation rate and a rise in the average annual CPI from 226 to 253, but it is suggested that the 12 percent forecast will be the minimum for 1981.

Population

Arizona's population growth over the past decade has been among the highest of all states. This year's population of 2,700,000 is somewhat less than predicted a year ago but is the result of the recession's influence on migration. The population growth rate for 1981 will be

about 2.2 percent compared to the 2.6 percent of 1980. While still high compared to the nation as a whole, Arizona's rate of population growth is slowing down. By mid-1981, population will reach 2,760,000.

Unemployment Rate

The average unemployment rate estimated for 1980 is 6.5 percent, the same as that forecasted last year thus verifying the anticipated recession. The ASU model forecasts a decline in the unemployment rate to 6 percent in 1981 anticipating a very mild recovery from the 1980 recession. Total employment is expected to reach more than one million jobs in 1981 out of a nonagricultural labor force that will consist of 1,085,000 people.

Retail Sales

The level of retail sales for 1980 is estimated at approximately \$14 billion if retailers have the kind of Christmas season they are hoping for. This will be an increase of 8 percent over 1979 in current dollars but less than half of the 18 percent increase forecast a year ago. In constant dollar terms, retail sales declined 6.2 percent. Retail sales will improve somewhat next year when the figure will reach \$15.5 billion, a 12.7 percent increase. However, the anticipated increase in the Phoenix CPI will reduce that figure to a real increase of less than 1 percent. (Paul Jones of Valley National Bank reports on consumer attitudes and retail sales later in this issue of *Arizona Business*.)

ECONOMIC SECTORS

This section presents a brief summary of 1980 and the 1981 outlook for major economic sectors of the Arizona economy.

Agriculture

Agriculture remains a strong partner in Arizona's economic progress. Rising prices for agricultural products should make 1981 a good year. Employment in agriculture will remain at the level of 23,000 workers; however, since the final resolution of Central Arizona Project water allocation has not been made, the agricultural sector must be viewed with some caution.

Mining

Arizona's mining sector is experiencing hard times. Current employment is down from what it was in 1979.

There are currently about 13,000 mining employees, which will increase slightly to about 14,000 next year. The slow economic recovery does not bode well for the copper mines. The problems of the automotive and construction sectors are real and deep and they affect copper severely. In addition, a glut of copper is evident worldwide. Mining in general will continue to be a diminishing sector of the Arizona economy.

Manufacturing

This sector has continued as a strong factor in the Arizona economy in spite of the recession. Employment has grown and stands at approximately 152,000. By the end of 1981, employment in manufacturing will be approximately 160,000, a good increase, but one that would be greater if national recovery were to occur at a brisker pace. (John Welty of Motorola presents a more in-depth report on manufacturing in Arizona later in this issue of *Arizona Business*.)

Tourism

Tourist expenditures in Arizona in 1980 were expected to hit the \$4.6 billion level. Given the recession and gasoline prices that average \$1.25 per gallon, this expected level probably will not be reached. Tourism, however, will still be a major sector of the economy because it accounts directly for nearly 75,000 jobs, plus a secondary effect on another 125,000 service and trade-related jobs. Tourist expenditures in 1981 will approach \$5.25 billion given the mild economic recovery that will occur.

Construction

This sector began to feel the pinch of rising interest rates and its associated lack of funds more than a year ago. Since that time the construction industry has suffered through one period of record high interest rates and is currently feeling the impact of another. There is no immediate relief in sight for the state. Inflation and associated high rates of interest will plague the industry throughout 1981. Current employment stands at about 70,000. Employment will rise, but slowly, and will be in the range of 75,000 to 77,000 by the end of the year. The financial sector is being quite innovative (through variable-interest mortgages, for example) in order to attract funds into the mortgage market, but a shortage of funds combined with continually rising land and construction costs make it difficult. (Jackie Pettycrew of Phoenix Newspapers, Inc. will provide more information

on construction and housing starts later in this issue of *Arizona Business*.)

Transportation, Communication, and Public Utilities

Employment in this sector now stands at about 49,000. This sector grows directly with population; hence by the end of 1981, employment will be at 51,000.

Wholesale and Retail Trade

This is the largest sector with respect to employment in the Arizona economy, accounting for close to one-fourth of all nonagricultural jobs. This sector grows directly with population and income. Currently, employment stands at close to 245,000. By the end of 1981, employment in trade will approach 250,000.

Finance, Insurance, and Real Estate

Employment has expanded rapidly in this sector over the past several years and 1980 was no exception. Currently, employment stands at 57,000 and by the end of 1981 will be at least 59,000 as the demands for these important services increase with population and income.

Services

This sector is tied directly to tourism for many of the jobs it provides. Services follow only wholesale and retail trades in terms of total employment. Current employment is approaching the 200,000 level and by the end of 1981 will have increased another 3.5 percent to 207,000.

Government

This sector of Arizona's economy continues to grow. Growth of government is tied to population growth and economic growth; and for school districts, the age distribution of the population is crucial in determining service levels and employment. Most of the growth in government employment has occurred at the state and local level with federal employment virtually unchanged from a year ago. At present, government employment stands at about 203,000 and should increase by two or three thousand more by the end of 1981.

SUMMARY AND CONCLUSIONS

Total real personal income will rise, but per capita real income will fall for the third straight year. However, the rate of decline will be much less than it was in 1980. Overall, we will continue a slow rate of recovery from the 1980 recession, but inflation will continue to stifle the level of real economic activity. That will create a cost all Arizonans will share.

Economic Trends In Arizona for 1981

THREE VIEWS OF THE FUTURE

ARIZONA CONSUMERS

B. Paul Jones
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Investment & Economic Planning Division
Valley National Bank

In each of the last three years, the President and the Congress have given the people of the United States a Christmas gift. The package has included:

- Explosive increases in federal spending
- Evermore onerous levies of federal taxes
- Huge budgetary deficits
- Rapid growth in the money supply to accommodate the financing of the mushrooming federal debt
- High and rising rates of inflation
- Spasmodic imposition of monetary policies designed to curb the money demands stemming from the excesses
- High and rising interest rates

During the annual ASU Economic Forecast Luncheon on December 11, three prominent local business people expressed their views on various facets of the Arizona economy. This article presents the remarks of the three participants with respect to the consumer's view of the future, the Metropolitan Phoenix economy, and the economic outlook for manufacturing.

Initiatives of October, 1979, represented a historic change in the conduct of monetary policy. The Federal Reserve declared its intention to control the growth of the money supply rather than interbank interest rates. Nevertheless, through the early part of 1980, the money supply grew excessively while interest rates fluctuated widely. In mid-March, the Federal Credit Restraint program was imposed. As a result, the economy collapsed. The money supply declined.

Seeing and fearing the results of their handiwork, the authorities flooded the system with new reserves. As the economy recovered, the money supply resumed its inordinately rapid growth. Inflationary expectations re-emerged. The Federal Reserve rededicated itself to controlling the growth of the money supply. Their efforts have yet to be successful, and interest rates have skyrocketed.

In 1980, the quarterly surveys of consumer attitudes and buying intentions conducted for the Valley National Bank by the Behavior Research Center have reflected the traumatic fluctuations in the national economy. The Arizona Consumer Confidence Index in April (taken after the mid-March Federal Credit Restraint program) dropped to 36, down sharply from the 52 level in January and the lowest point reached in the history of the index. The Confidence Index rose sharply to 52 in July and showed further improvement to the 60 level in the October survey. Yet, the Confidence Index remains below the range of 70 to 86 achieved in the years of 1976 through 1978.

The reasons for improved confidence are clear from the surveys. Looking six months ahead, the survey in April found that 65 percent of Arizonans felt the national economic situation would deteriorate. In the latest survey, only 33 percent felt that the economic situation would worsen in the coming six months.

In April, 53 percent of the respondents felt that there would be fewer jobs available in Arizona six months from that date. By October, only 14 percent of the respondents felt there would be fewer jobs available and 77 percent felt that there would be more or the same number of jobs available.

Arizona citizens have continued to appraise the outlook for inflation realistically. In the current survey, 89 percent felt that prices would increase over the coming year, and 30 percent felt that prices would increase sharply. Since January, 1977, over 80 percent of the survey respondents have consistently felt that prices would rise.

Attitudes toward wages and family incomes continue to be favorable. Ninety-five percent expect wages to be the same or higher during the coming year. Ninety percent expect family incomes to improve in the coming six months. However, the ravages of inflation are reflected in attitudes toward family financial situations. Only 39 percent feel the family financial situation will be better a year from now.

In response to the specific question "What concerns you the most about the economic situation?" inflation continued to dominate, with particular worries about prices for food, energy, utilities, and housing. Arizonans were distressed about taxes, wage levels, and unemployment.

Overall the consumer is a skeptical observer of the economic situation and is, at best, disenchanted.

The index of planned buying reflects the "roller coaster" economy and interest rate patterns of the last year. At the end of 1979, the consumer planned-buying index was 159. By April it had deteriorated to 119. As the economy recovered, the index rose to 167 in the summer. As inflation intensified and interest rates rose, the index slipped back to 146 at the latest reading. All major categories of consumer durable goods reflected the deterioration, with particular weakness in plans to purchase automobiles. Also scaled back were plans to purchase white goods (washers and dryers, dishwashers, refrigerator-freezers, ranges and ovens, water heaters and softeners, and disposals), brown goods (TVs, audio equipment, sewing machines, power tools and musical instruments), household goods and home improvements. Home buying plans slipped in the last half of the year.

Last year the Arizona forecast reported as follows:

"The consumer appears to be reacting quite logically to negative fundamentals. He has begun to retrench. With recession the most likely prospect for 1980, the process of repairing the customer's position should require a number of months to complete. Consequently, we anticipate further slowing in the rate of growth in consumer spending in Arizona."

In 1980, retail sales in Arizona declined in real terms and in two months were actually lower in dollar terms than in the comparable months of the preceding year. The consumer's caution was reflected in the management of household debt. Although figures for the state are not available, consumer credit outstanding at the Valley National Bank is an excellent proxy. In the first quarter of 1980, consumer credit had reached \$1.19 billion. By the third quarter, outstanding credit had declined to \$1.18 billion. Normally, consumer credit would have been expanding rather than contracting.

The Arizona consumer will be entering 1981 with the economy restrained by monetary policy, high interest rates, and high inflation. Personal income will be growing, but more slowly than the rate of inflation. Real incomes continue to be eroded. The scheduled increases in social security taxes and personal income taxes through "bracket creep" will further impair family spendable incomes. With the increases in food and energy prices that are probable in 1981, more of family incomes will have to be dedicated to necessities.

The savings rate is about half of what it has been historically at this point of the business cycle. Consumers are still using over 17 percent of disposable incomes just to pay off previously accumulated debts. The process of retrenchment is continuing and will be a major influence in restraining consumer spending for at least the first part of next year.

However, in the past two months, consumer installment credit outstanding has begun to grow for the first time in 1980. This suggests that, although spending patterns will continue to be careful, spending patterns will be supported by previously accumulated savings and will be augmented by further increases in borrowing. It is likely that the tax burden will be moderated by a so-called tax cut later in the year. Thus, households are likely to be encouraged to leverage their increases in personal income to make larger investments in consumer durables, housing and financial assets in the last part of 1981.

The consumer surveys and the objective data support the thesis that 1981 should be a difficult year of

transition. By the end of the year consumer markets should be improving, and the year as a whole should show worthwhile gains over 1980. Once again, the Arizona consumer and the Arizona economy should outperform the nation as a whole.

THE METROPOLITAN PHOENIX ECONOMY

Jackie Pettycrew
Market Research Manager
Phoenix Newspapers, Inc.

This portion of the article discusses what has happened this year and what is expected to occur over the next twelve months in metropolitan Phoenix, with particular emphasis on developments in consumer economics and housing.

The *Arizona Republic* and *The Phoenix Gazette* have just completed a consumer survey, an extensive study into the components of household growth and development of the metropolitan area. Much of the data from that survey will be published in *Phoenix 1981*, which will be released at the Symphony Hall presentation on March 18, 1981. Since the results are not yet in our hands, this article is based on preliminary tallies that are subject to some minor adjustments.

Median household income seems to have taken a tremendous upward surge since a similar study two years ago. The current figure is in excess of \$22,000, an increase of about 37 percent over the 1978-1979 figure of \$15,344. This cannot be verified until the hard data are in, but a major determinant is probably that the number of two-income households has also taken a quantum leap forward. Employment figures tend to substantiate this premise, especially when one considers the growth in the local electronics manufacturing sector and its higher salary scale.

Another interesting bit of information pertains to Phoenix area newcomers. Maricopa County residents who have lived here less than one year are currently estimated to stand at 6 percent of the total, or approximately 36,000 households. This percentage figure is lower than any other year throughout the 1970s, with the range traditionally falling between 9 and 12 percent; but, five years ago, during the last recession, newcomers dropped to 8 percent, or 37,000 households. The correlation between a tight economy and the ability of families to change their place of residence becomes quite obvious.

Valley National Bank's estimates of retail sales are additional evidence of our straitened economy. For the first three quarters of 1980, retail sales were posted at \$6.2 billion, an increase of slightly more than 9 percent over the same nine months last year. By year's end Valley Bank's statisticians expect that the gain will amount to 9.9 percent, slightly less than the 11 percent that was predicted a year ago. For 1981, they project that retail dollars accrued in Metropolitan Phoenix should increase by 13.5 percent to \$9.8 billion.

October employment figures from the Arizona Department of Economic Security (DES) were yet another reflection of the state of our economy. Although the metropolitan area's unemployment rate of 5.4 percent for October was more than 2 full percentage points below that of the nation as a whole, expected gains in the service and retail categories did not quite meet the mark as well as they did in 1979. DES estimates that growth of the labor force this year, as measured on a December-to-December basis, will only amount to 1.7 percent in the final analysis, one of the lowest rate gains in several years.

Housing

Tracking the mortgage rates became a rather unfunny game during the past twelve months, and those up-down-back-up-again numbers had their expected near disastrous effect on the housing market, not only locally, but nationally as well. Last year at this time, it was optimistically predicted that 30,000 new residential units were needed to fill the expected demand.

By March of this year, when Phoenix Newspapers' presentation was put before the public, the mortgage money situation had already begun to take its toll, and the estimate was revised downward to 21,500 permits, fortunately. Recent information from the Maricopa County Housing Study Committee report indicates that total permits through November amounted to approximately 20,700, making the revision a much more palatable figure.

Another factor came into play in the analysis of permit data. For the first time since the early 1960s, the ratio of single dwellings to multiples was just one point away from being a fifty-fifty split. The area has been a predominantly single-family-housing market for years, with newcomers demanding the "wide-open-spaces" concept that brought them west. Now, the economy has changed all that, and rental units are in greater demand as young couples and other new family formations find they must postpone home buying until their income and

the cost of borrowing money are more in agreeable alignment.

Because of the flurry of building activity in multiple units, the vacancy rate jumped from 3 percent at this time last year to the current 7 percent. This factor is helping to keep rental rate increases in check, at least for the next six to nine months. Builders should definitely conduct some in-depth analysis of all economic factors, both existing and projected, before putting themselves and the community into an overbuilt situation as far as apartment housing is concerned.

Pent-up demand, plus innovative approaches to financing that are either now in effect or in the planning stage, are certain to shift the proportion of residential housing back to past patterns over the next two years. For 1981, building permit figures are projected to reach at least 23,000 not only because of the supply-and-demand factor, but also because of a perceived willingness to arrive at a solution to the present money situation.

Conclusion

Certainly all residents of the Phoenix area can be proud to be a part of this great community. No other city in the nation can claim attendance figures at economic presentations such as those sponsored by the Arizona State University College of Business Administration and the spring meeting sponsored by Phoenix Newspapers, Inc. It is this interest in and devotion to the ordered growth of Phoenix that makes this community unique, and the prevailing attitude and cooperative spirit are the envy of other wishful community developers.

As Phoenix and the state continue to grow, sheer size demands that business leaders continue unremittingly to monitor all the component parts and take swift action to correct possible wrongs. Whether the aspect is cultural or criminal, economic or educational, there is a need to keep abreast of and implement fresh ideas that we feel will work.

A recent *U.S. News and World Report* carried a feature entitled, "The Next 20 Years." Here is an excerpt on changes foreseen in the way Americans work:

Work 'decentralization' is occurring even now, will pick up momentum...more people will toil at home, away from downtown offices. There'll be less need to go to the city, since computers, video terminals, other electronic tools will let white collar workers operate from any site...There'll be a demand for at-home office space in future houses and apartments, a concept architects, builders and developers are already latching onto.

Potentially staggering implications of this trend: downtown office space may be less essential...commercial and municipal parking lots will have empty slots...rush-hour traffic could become a memory...in-town restaurants, movies, stores face potential losses in trade...burglaries should dip, what with residents around more hours.

Granted, such effects aren't imminent. Not next year or year after, but taking shape now and sure to spread. Corporations will probably never eliminate the headquarters location, yet with growing numbers of people doing information-manipulating chores, it won't be as necessary to 'warehouse' large cadres of workers in town.

The preceding quote dealt with just one set of premises on one subject, but the ripple effect of this highly likely prediction would be enormous.

ARIZONA'S MANUFACTURING OUTLOOK FOR 1981

John R. Welty

*Senior Vice President, General Manager
Semiconductor Group, Motorola Inc.*

From all indications, Arizona's manufacturing community continued to enhance its position this year as the fastest growing segment of the state's economy.

As in past years, the statistics in this forecast article resulted from a survey of about twenty of the largest industrial employers in Arizona. Without a doubt, the numbers indicate that 1980 is another record year for Arizona's manufacturers. As a group, these companies have recorded healthy gains in all important parameters of measurement.

In looking forward to 1981, the numbers continue to reflect an air of cautious optimism which is prompted on one hand by the growth achieved this year, and on the other hand by growing concerns about the prospect for any speedy economic recovery in the United States and by the quick economic erosion taking place in several foreign economies, most notably in Western Europe. On balance, the responses to the survey were generally encouraging.

Key Indicators

Shipments. On the subject of order shipments, in 1979, the surveyed companies shipped about \$3.6 billion worth of product to worldwide customers. That is about \$600 million more — exactly 20 percent more — than they anticipated they would ship when they were

surveyed last year. Again, that is a reflection of the cautious optimism that has been prevalent over the past several years. This year, these same companies will ship about \$4.2 billion, or 17 percent more than last year. For 1981, the companies expect to ship about \$4.7 billion, an increase of nearly 10 percent over this year.

Backlog. In the order backlog category, the level continued to grow at a healthy pace. In 1979, the year-end backlog level was just under \$3 billion, as the companies anticipated. This year, the backlog level will stand at \$3.37 billion, for an increase of about 20 percent. Next year, the companies expect the level to reach \$4.2 billion, for an increase of 24 percent. A large share of this increase is accounted for by the military/aerospace segment and reflects an expectation of increased federal spending for defense.

Employment. In employment, the same healthy trend exists. Last year, the surveyed companies represented an employment locally of just over 52,000. This year, they represent 55,600 employees, an increase of about 6 percent. In 1981, the companies expect to increase employment by another 9 percent, to a total of 60,700 employees.

Obviously, the state's manufacturing employment totals far more than 60,000 people, but this number includes only the twenty companies surveyed and does not include, for example, several important newcomers to the state who elected not to participate in the survey.

Exports. Shipments for foreign export also continued to grow this year. In 1979, the dollar value of goods manufactured in Arizona and exported to foreign markets totaled more than \$781 million. This year, the number grew to over \$922 million, for an increase of about 18 percent. For next year, the companies anticipate an 8 percent increase to just under \$1 billion. Exports as a percentage of total shipments are also continuing to increase. It is about 19 percent this year, and may be nearly 21 percent in 1981.

This year it was again interesting to note the consistency of the projected growth statistics provided by the manufacturers. In all four categories — shipments, backlog, employment and exports — nearly all of the twenty companies reported fairly large increases over the forecasts they made last year, and again, they expect moderated growth next year.

Inhibiting Factors

As in past surveys, participants were also invited to comment on any factors they believe will inhibit the

continued growth of the state manufacturing industry. On the local level, their comments focused on two areas. First, a major concern is the deteriorating highway and road maintenance program and, in light of steadily increasing population density, how an adequate maintenance program will eventually be funded. Second is the need for a prompt solution to the hazardous waste disposal issue, in terms of site selections and disposal methods.

On the national level, there is concern about the steadily increasing interest rates and their impact on the housing, automotive, and computer segments of the economy, all of which are keys to the health of our manufacturing community.

Then too, there is the continuing concern about steadily increasing government regulations which are inhibiting successful competition with foreign producers both in the United States and foreign markets. The hope was expressed by several companies that the Reagan administration would somehow be able to reverse the tide before it's too late.

Conclusions

Several important conclusions can be derived from our survey. First, most companies are expecting the second half of 1981 to be stronger than the first half, indicating a belief that full recovery from the United States recession will be slower than originally anticipated, and that a fair degree of sluggishness will continue at least through the first half of next year. Again, the sales growth of the twenty companies surveyed was 27 percent in 1979; 17 percent this year, and expected to be 10 percent next year. The scenario calls for continuing moderate growth.

Second, electronics continues to be the fastest growing segment of the state manufacturing industry; this is expected to continue well into the future. As a result, employment increases are heaviest in the technical skills area, which is also expected to continue in the future.

Finally, despite adverse economic conditions that may exist in the short term, the long-term outlook is extremely bright for manufacturing in Arizona. During the decade of the 1980s, dramatic increases can be expected in manufacturing activity throughout the state, which will greatly benefit all sectors of the state's economy.

As an example of this kind of manufacturing growth, this year, there is a single billion dollar manufacturing concern in the state; that is Motorola's Semiconductor

Group. Next year there will be two, as AiResearch crosses the billion dollar level. Both of these companies anticipate being at the two billion dollar level by 1985 or 1986, and by that time, there may be one or two more companies at the billion dollar level.

These very large companies, coupled with the hundreds of small and medium-sized companies that are either already here or will locate here, should provide an average annual growth rate larger than that of any other major economic sector.

The Arizona Business Scene



The Construction Industry in Arizona



Because Arizona is one of the most rapidly growing states in the country, the construction industry plays a major role in the state's economy. Construction employment in 1979 was 8.5 percent of Arizona's total employment, in contrast to only 5.2 percent of the nation's total employment; approximately 83,000 Arizonans were employed in the construction industry in 1979. These employees worked on construction valued at \$2.6 billion, as measured by building permits. An estimate of the total value of construction contracts awarded in 1979, including nonbuilding construction such as highways and bridges, was \$3.5 billion.¹

The construction industry in Arizona is an unstable industry, however, and responds to general economic conditions as evidenced by swings in construction employment, building permit valuations, and new housing starts. During the recession of the mid-1970s, 31,000 construction jobs were lost in Arizona. From the peak employment level in 1973 to the lowest level in early 1976, construction employment dropped 45 percent. Unemployment of this magnitude places a strain on the entire economy of the state. It was not until 1978 that construction employment reached its previous peak, set five years earlier. In late 1979, construction employment once again began to drop, and by August, 1980, nearly 15,000 construction workers across the state became unemployed. A slight increase in construction employment occurred in September, marking August's employment level as perhaps the lowest in the current recession.

The cyclical nature of the industry is also obvious in the fluctuations in building permit valuations caused

mainly by residential and commercial construction (Table 1). Residential construction tends to slump and recover several months before commercial construction, helping to spread out the shock to the local economy of a sudden construction slump. Industrial and Other (public buildings, fences, swimming pools, etc.) building permits are more stable, also helping to buffer the economy from sudden construction slumps.

TABLE 1

ARIZONA BUILDING PERMIT VALUATIONS (in millions of dollars)

Year	Residential	Commercial	Industrial	Other	Total
1974	457.8	389.4	41.5	149.2*	1,037.7*
1975	406.6	201.6	43.2	169.9	821.2
1976	544.5	233.4	39.4	176.8	994.2
1977	1,096.3	284.6	43.0	252.4	1,676.4
1978	1,482.5	542.2	77.1	288.0	2,389.8
1979	1,328.9	762.2	178.4	387.3	2,620.9
1980P	1,130.0	720.0	150.0	400.0	2,400.0

P = Projected

*Omits a single building permit for \$500 million.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

In the mid-1970s, building permit valuations fell considerably from the peak that was reached in 1973. This drop was caused by major declines in residential and commercial construction: Residential construction began to slump in 1974; commercial construction fol-

lowed in 1975. The same pattern is repeating itself now, as residential construction began to decline in 1979, but commercial construction remained strong until the middle of 1980.

New housing starts in Arizona have a pattern similar to that of building permits, as shown in Table 2. Construction of single family residences slumps at the beginning of a recession, followed by construction of apartments (multiple units). A sharp, but relatively short decline in new house construction occurred in late 1979 and early 1980. Construction of multifamily units slowed in early 1980 and is still quite depressed.

TABLE 2
ARIZONA NEW HOUSING STARTS

Year	Single Family	Multiple Units	Total Housing Units
1974	23,282	13,977	37,559
1975	19,326	2,948	22,274
1976	22,844	5,217	28,061
1977	38,473	8,314	46,987
1978	51,104	18,247	69,551
1979	44,542	19,241	63,783
1980P	31,000	13,000	44,000

P = Projected

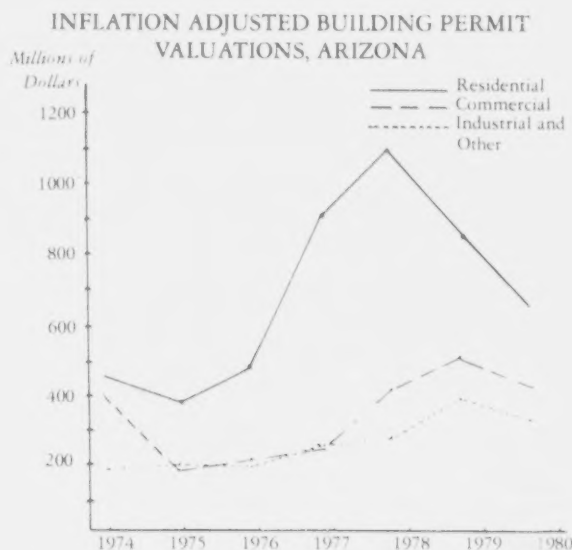
Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

The construction industry fluctuates because of its dependence on interest rates and the availability of financing. Typically at the beginning of a recession, interest rates increase and funds become less available for construction loans. This is followed by a decrease in demand for housing and for commercial developments due to the high interest rates and concern over future conditions by both businesses and the general public. All of these factors combine to postpone plans for new construction, resulting in a layoff of construction workers.

Despite the regularity of the construction industry, the industry in Arizona is growing both in employment and in the number and value of construction permits. Construction employment grew at an average annual rate of 9.3 percent from 1970 to 1979, more rapidly than the construction industry nationwide and more rapidly than overall employment in Arizona. Building permit

valuations, even after adjusting for the rapid inflation of the 1970s, show an upward trend, as illustrated in Figure 1. A similar growth pattern has occurred in the construction of new housing units.

FIGURE 1



Source: Computed from Table 1 and the Metropolitan Phoenix Consumer Price Index, Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

In addition to the cyclic nature of the industry and its long term growth, within any given year the industry will exhibit some seasonality due almost entirely to residential construction. Residential construction tends to slow down during autumn and winter, with an increase in activity in the spring and summer. This seasonal pattern is not strong enough to affect employment, however, except for a slight slowdown in growth at the end of the year.

The construction industry in Arizona is a boom industry, but one subject to potentially severe slumps. It is currently experiencing one of those slumps, the only Arizona industry in the current recession to be so affected.

¹Reported in *Dodge Construction Potentials*, F.W. Dodge Division, McGraw-Hill Information Systems.

A Survey of Arizona Business Conditions

HAROLD FEARON

The economy continued to gain strength in November, according to results from the monthly business survey of the Purchasing Management Association of Arizona. The upswing has been moderate so far, although all indicators of economic activity continue positive for the third consecutive month. Unfortunately, inflation shows no sign of abating and will make it difficult for the recovery to score major gains in the immediate future.

The purchasing business survey now is in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, enabling economic turning points to be spotted.

Prices paid for major purchased items followed the same, monotonous upward path in November. The increase rate was consistent with the previous month, with 59 percent of the purchasing managers reporting higher prices; 38 percent saying prices were unchanged; and only 3 percent indicating they paid lower prices in

November compared to October. While the inflation rate did moderate somewhat in the third quarter of the year at the low point of the recession, the recovery has now pushed the inflation rate up again; November was the fourth month in a row that the rate of inflation has increased. It appears unlikely that much headway in the battle against inflation will be made in the immediate future, and this will make it difficult for a really robust recovery to get underway.

Delivery time on shipments from vendors is still stretching out, as vendor order books begin to reflect the stronger rate of economic activity. The November increase was the same as in the previous month, with 28 percent reporting faster deliveries, while only 13 percent said their firm received faster service from vendors in November than in October. This was the fourth month in a row that lead times have increased.

Inventory levels of purchased materials increased in November, reversing a seven-month downward trend, as 32 percent of the firms added to stocks, compared to the 22 percent who continued to liquidate inventory. Continued inventory additions are likely to occur over the next several months with firms beginning to build stock levels to meet the higher operating rates required by customer demands. These inventory increases will provide additional stimulus to the recovery.

New orders received from customers continued to increase for the fourth consecutive month, but the net increase rate was down somewhat from the last two months and the smallest since last August. Of the firms

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surveyed, 30 percent booked more new business in November than in October, but 24 percent saw a decrease in the rate at which they received incoming business. This shows that the economic recovery is proceeding at a more moderate pace than in previous upswings.

Production continued to increase in November, as needed to meet higher customer demand, and at a rate consistent with the previous month. This was the fourth consecutive monthly increase, with higher production reported by 35 percent of the firms, which was twice as many as the 17 percent who cut back output. This is an encouraging sign, although such production increases can be maintained only if the new order rate gets stronger over the next several months.

Employment of Arizona firms increased again for the third month in a row, although the month-to-month increase rate was down somewhat from October. Higher employment was reported by 22 percent of the firms, compared to 13 percent who pared payrolls. Additional increases are dependent on the new order increases registered over the next few months.

Thus, the November figures paint a picture of an economy that is moving in an upward direction, although

the overall recovery seems weak. The Arizona economy will close out the year on a positive note, but the strength and duration of the recovery still are in doubt. The next few months will be watched very closely as an indicator of the overall strength and resiliency of the current upswing.

The results of the November survey are shown in Table 1.

TABLE 1

NOVEMBER PURCHASING SURVEY

Key Indicators	Percent of Purchasing Managers Indicating Each Response (November compared to October)		
	Higher	Same	Lower
Prices paid for major commodities	59	38	3
Delivery time from vendors	28	59	13
Purchased materials inventory level	32	46	22
New orders received	30	46	24
Production	35	48	17
Employment	22	65	13

Source: Survey of the Purchasing Management Association of Arizona.

ARIZONA SALES OF ELECTRICAL POWER

By Months
(In millions of kwh)

	Actual		Percent Change Current Month From	
	1980	1979	Same Month Previous Year	Previous Month
October	2,288.2	2,265.0	1.02	-14.33

Source: Based on reports from major suppliers.

OCTOBER, 1980

Arizona Building Permits: Monthly Report

	RESIDENTIAL*			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value	
APACHE COUNTY	14	158,000		—	—		1	100,000		2	100,000		17	361,000	
Eagar	2	88,000		—	—		1	100,000		1	100,000		4	288,000	
St. Johns	6	N/C		—	—		—	—		—	—		6	N/C	
Springerville	4	N/C		—	—		—	—		—	—		4	N/C	
Unimc Apache County	2	70,000		—	—		—	—		—	—		2	70,000	
COCHISE COUNTY	106	2,701,294		8	358,485		1	12,500		139	260,285		254	3,332,560	
Benson	4	61,500		—	—		—	—		6	4,650		10	66,150	
Bisbee	4	15,700		—	—		—	—		17	11,000		21	26,700	
Douglas	17	709,168		2	171,633		—	—		15	49,297		34	930,098	
Huachuca City	9	12,725		1	94,000		—	—		86	152,468		106	106,725	
Sierra Vista	20	498,417		—	—		—	—		5	2,040		15	650,885	
Tombstone	6	8,000		4	2,850		—	—		9	38,828		54	12,890	
Unimc Cochise Co.	45	1,394,784		—	—		—	—		1	2,000		4	1,433,612	
Willcox	1	1,000		1	90,000		1	12,500		49	326,583		50	105,500	
COCONINO COUNTY	170	3,490,598		17	570,468		1	3,000		38	292,063		237	4,390,649	
Flagstaff	41	1,652,872		13	469,941		—	—		—	—		92	2,414,876	
Fredonia	3	52,500		—	—		—	—		6	29,500		5	32,500	
Page	20	68,945		2	29,500		1	3,000		1	3,000		29	130,945	
Unimc Coconino Co.	105	1,697,531		2	71,027		—	—		1	3,000		108	1,771,558	
Williams	1	38,750		—	—		—	—		4	2,020		5	40,770	
GILA COUNTY	91	1,135,891		3	435,408		—	—		16	19,800		110	1,601,099	
Globe	7	73,500		1	290,000		—	—		5	14,700		13	378,200	
Hayden	2	2,000		—	—		—	—		1	100		3	2,100	
Miami	4	2,800		—	—		—	—		—	—		4	2,800	
Payson	34	523,901		1	135,408		—	—		10	5,000		45	464,309	
Unimc Gila Co.	44	733,690		1	20,000		—	—		—	—		45	733,690	
GRAHAM COUNTY	31	595,715		3	497,475		—	—		3	700		37	1,093,890	
Pima	—	—		—	—		—	—		—	—		—	—	
Safford	8	50,785		1	226,000		—	—		—	—		12	277,485	
Thatcher	6	233,000		1	240,000		—	—		3	700		7	473,000	
Unimc Graham Co.	17	511,950		1	31,475		—	—		—	—		18	343,405	
GREENLEE COUNTY	8	278,645		—	—		—	—		—	—		8	278,645	
Clifton	—	—		—	—		—	—		—	—		—	—	
Duncan	1	1,250		—	—		—	—		—	—		1	1,250	
Unimc Greenlee Co.	7	277,395		—	—		—	—		—	—		7	277,395	
MARICOPA COUNTY	2,260	61,713,627		162	39,687,969		58	29,317,082		1,535	33,465,011		4,015	164,381,689	
Avondale	1	N/C		—	—		—	—		15	59,180		16	59,180	
Buckeye	5	125,000		2	1,102,300		—	—		1	24,900		8	1,252,200	
Chandler	126	3,840,145		1	18,800		1	75,000		143	5,557,289		271	7,491,232	
El Mirage	5	50,000		—	—		—	—		—	—		5	50,000	
Gila Bend	2	3,100		3	650,000		—	—		1	600		6	653,700	
Gilbert	17	540,054		1	135,000		—	—		24	2,028,923		42	2,703,977	
Glendale	106	2,327,500		21	2,485,600		—	—		196	546,770		323	5,357,670	
Goodyear	—	—		—	—		1	1,395,228		8	19,100		9	1,414,328	
Guadalupe	1	2,280		—	—		—	—		—	—		1	2,280	
Mesa	119	3,435,716		12	1,977,727		—	—		254	4,771,430		387	10,659,873	
Paradise Valley	27	2,051,170		—	—		2	477,000		16	349,626		43	2,400,796	
Peoria	16	422,851		2	56,000		—	—		19	51,731		37	530,582	
Phoenix	671	19,689,768		41	20,493,885		20	19,852,497		465	19,067,121		1,197	79,103,269	
Scottsdale	197	9,826,083		19	6,811,809		1	1,370,757		180	1,160,159		397	19,168,808	
Surprise	7	31,800		—	—		—	—		5	1,525		12	33,325	
Tempe	151	3,328,600		33	2,959,600		33	6,346,600		80	1,141,600		297	13,776,400	
Tolleson	5	3,220		—	—		—	—		—	—		5	3,220	
Unimc Maricopa Co.	781	15,761,506		27	2,999,250		—	—		127	682,467		935	19,443,223	
Wickenburg	6	127,500		—	—		—	—		—	—		6	127,500	
Youngtown	21	149,536		—	—		—	—		1	590		22	150,126	

Arizona Building Permits: Monthly Report (Continued)

OCTOBER, 1980

	RESIDENTIAL*			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Dollar Value
MOHAVE COUNTY															
Kingman City	361	5,946,947	27	1,427,404	—	—	—	—	—	282	460,055	670	7,834,406	—	—
Kingman Area	27	552,023	5	186,896	—	—	—	—	—	6	80,725	38	819,644	—	—
Lake Havasu City	59	715,834	2	161,280	—	—	—	—	—	55	71,580	116	948,694	—	—
Lake Havasu Area	74	2,161,543	8	640,718	—	—	—	—	—	12	65,720	94	2,867,981	—	—
Mohave Valley North	27	267,938	—	—	—	—	—	—	—	19	21,555	46	289,513	—	—
Mohave Valley South	99	1,401,207	10	423,534	—	—	—	—	—	114	128,733	223	1,953,476	—	—
Dolan Springs	49	539,292	—	—	—	—	—	—	—	54	66,503	103	605,795	—	—
Sacramento Valley	15	146,704	—	—	—	—	—	—	—	9	17,384	24	164,088	—	—
Mohave County General	9	95,387	—	—	—	—	—	—	—	13	7,853	22	103,240	—	—
Navajo County	2	66,999	2	14,976	—	—	—	—	—	—	—	4	81,975	—	—
Holbrook	106	1,828,936	4	742,157	—	—	—	—	—	7	180,620	117	2,751,713	—	—
Show Low	7	271,500	—	—	—	—	—	—	—	—	—	7	271,500	—	—
Snowflake	6	64,988	1	27,000	—	—	—	—	—	1	60,000	11	151,988	—	—
Taylor	2	90,000	—	—	—	—	—	—	—	—	—	6	N/C	—	—
Uninc. Navajo Co.	69	1,256,148	2	661,157	—	—	—	—	—	58	89,620	76	2,006,925	—	—
Winslow	15	54,000	1	31,000	—	—	—	—	—	1	31,000	15	231,300	—	—
PIMA COUNTY	1,114	35,305,879	50	33,291,377	—	—	—	—	—	692	4,778,418	1,856	73,375,674	—	—
Marana	1	N/C	—	—	—	—	—	—	—	—	—	1	N/C	—	—
Oro Valley	1	90,000	—	—	—	—	—	—	—	—	—	1	90,000	—	—
South Tucson	19	59,655	5	17,000	—	—	—	—	—	—	—	24	56,655	—	—
Tucson	318	5,184,340	16	13,812,277	—	—	—	—	—	249	3,189,989	579	22,186,606	—	—
Uninc. Pima Co.	775	29,991,884	29	19,462,100	—	—	—	—	—	437	1,588,429	1,251	51,042,413	—	—
PINAL COUNTY	110	1,210,640	2	110,000	—	—	—	—	—	37	192,933	151	3,522,073	—	—
Casa Grande	16	52,227	—	—	—	—	—	—	—	—	—	20	2,531,427	—	—
Coolidge	11	22,322	—	—	—	—	—	—	—	1	9,200	12	22,322	—	—
Eloy	2	5,500	—	—	—	—	—	—	—	—	—	3	14,000	—	—
Florence	2	5,000	—	—	—	—	—	—	—	—	—	2	5,000	—	—
Kearny	3	6,000	—	—	—	—	—	—	—	—	—	2	5,000	—	—
Mammoth	—	—	—	—	—	—	—	—	—	—	—	4	68,000	—	—
Superior	6	14,250	—	—	—	—	—	—	—	—	—	—	—	—	—
Uninc. Pinal Co.	70	635,341	2	110,000	—	—	—	—	—	5	5,450	11	19,700	—	—
SANTA CRUZ COUNTY	11	353,412	—	—	—	—	—	—	—	27	116,283	99	861,624	—	—
Nogales	N/R	N/R	N/R	N/R	—	—	—	—	—	N/R	N/R	N/R	N/R	—	—
Paragona	3	16,500	—	—	—	—	—	—	—	—	—	4	17,500	—	—
Uninc. Santa Cruz Co.	8	336,912	—	—	—	—	—	—	—	1	1,000	13	1,087,612	—	—
YAVAPAI COUNTY	262	5,935,148	14	1,254,333	—	—	—	—	—	110	25,700	387	7,677,772	—	—
Chino Valley	15	216,900	2	210,000	—	—	—	—	—	4	451,291	21	436,050	—	—
Clarkdale	2	55,500	—	—	—	—	—	—	—	—	—	2	55,500	—	—
Cottonwood	18	150,025	—	—	—	—	—	—	—	—	—	24	258,825	—	—
Jerome	1	2,400	—	—	—	—	—	—	—	5	71,800	24	258,825	—	—
Prescott	52	736,497	5	321,269	—	—	—	—	—	68	291,862	125	1,349,628	—	—
Uninc. Yavapai Co.	146	4,571,442	6	700,600	—	—	—	—	—	32	77,479	184	5,149,521	—	—
Prescott Valley	28	402,584	1	22,464	—	—	—	—	—	—	—	29	424,848	—	—
YUMA COUNTY	169	2,030,842	13	2,756,035	—	—	—	—	—	22	302,889	205	5,178,956	—	—
Parker	1	37,000	—	—	—	—	—	—	—	—	—	2	37,900	—	—
Somerton	4	55,700	1	20,000	—	—	—	—	—	2	900	7	37,900	—	—
Uninc. Yuma Co.	111	1,217,392	5	1,441,777	—	—	—	—	—	9	88,444	126	2,856,803	—	—
Wellton	1	15,000	—	—	—	—	—	—	—	—	—	2	27,000	—	—
Yuma	52	725,750	6	1,262,258	—	—	—	—	—	10	211,545	68	2,199,553	—	—
TOTAL Maricopa County, October, 1980	2,260	61,713,627	162	49,687,969	—	—	—	—	—	1,535	33,463,011	4,015	164,381,689	—	—
TOTAL Maricopa County, October, 1979	2,284	62,094,666	138	53,265,959	—	—	—	—	—	2,089	21,167,767	4,556	152,907,018	—	—
PERCENT CHANGE	-1	-1	17	19	—	—	—	—	—	-27	58	-12	24	—	—
TOTAL Arizona, October, 1980	4,813	122,685,574	303	81,121,109	—	—	—	—	—	2,899	40,566,283	8,081	276,885,238	—	—
TOTAL Arizona, October, 1979	5,554	108,586,119	267	67,220,803	—	—	—	—	—	2,933	26,909,037	8,603	219,430,585	—	—
PERCENT CHANGE	-10	13	13	21	—	—	—	—	—	-1	51	-6	26	—	—

*Includes mobile homes

N/C: Not Collected

N/R: No report; data for this month will be combined with data reported for the following month.

Arizona New Housing Starts: Monthly Report

OCTOBER, 1980

BUILDING PERMITS ISSUED

	1*	3-4	5 or More	Housing Units
	Family	Duplex	Families	
APACHE COUNTY.....	14	—	—	14
Eagar.....	2	—	—	2
St. Johns.....	6	—	—	6
Springerville.....	4	—	—	4
Uninc. Apache Co.....	2	—	—	2
COCHISE COUNTY.....	69	—	—	69
Benson.....	2	—	—	2
Bisbee.....	—	—	—	—
Douglas.....	10	—	—	10
Huachuca City.....	—	—	—	—
Sierra Vista.....	17	—	—	17
Tombstone.....	1	—	—	1
Uninc. Cochise Co.....	39	—	—	39
Willcox.....	—	—	—	—
COCONINO COUNTY.....	106	1	2	115
Flagstaff.....	28	1	2	37
Fredonia.....	2	—	—	2
Page.....	14	—	—	14
Uninc. Coconino Co.....	62	—	—	62
Williams.....	—	—	—	—
GILA COUNTY.....	57	—	1	60
Globe.....	1	—	—	1
Hayden.....	—	—	—	—
Miami.....	—	—	—	—
Payson.....	23	—	1	26
Uninc. Gila Co.....	33	—	—	33
GRAHAM COUNTY.....	19	—	—	19
Pima.....	—	—	—	—
Safford.....	1	—	—	1
Thatcher.....	4	—	—	4
Uninc. Graham Co.....	14	—	—	14
GREENLEE COUNTY.....	7	—	—	7
Clifton.....	—	—	—	—
Duncan.....	—	—	—	—
Uninc. Greenlee Co.....	7	—	—	7
MARICOPA COUNTY.....	1,455	15	32	2,295
Avondale.....	1	—	—	1
Buckeye.....	4	—	1	64
Chandler.....	100	—	—	100
El Mirage.....	3	—	—	3
Gila Bend.....	—	—	5	36
Gilbert.....	11	—	—	11
Glendale.....	73	—	2	265
Goodyear.....	—	—	—	—
Guadalupe.....	—	—	—	—
Mesa.....	70	10	2	119
Paradise Valley.....	14	—	—	14
Peoria.....	14	—	—	14
Phoenix.....	418	4	20	685
Scottsdale.....	160	—	1	276
Surprise.....	2	—	—	2
Tempe.....	70	—	4	180
Tolleson.....	—	—	—	—
Uninc. Maricopa Co.....	508	—	3	520
Wickenburg.....	3	—	—	3
Youngtown.....	2	1	—	4

*Includes Mobile Homes

N. R.: No report; data for this month will be combined with data reported for the following month.

BUILDING PERMITS ISSUED

	1*	3-4	5 or More	Housing Units
	Family	Duplex	Families	
MOHAVE COUNTY.....	219	3	—	258
Kingman City.....	16	—	—	16
Kingman Area.....	36	3	—	42
Lake Havasu City.....	56	—	1	64
Lake Havasu Area.....	15	—	—	15
Mohave Valley North.....	52	—	1	57
Mohave Valley South.....	50	—	—	50
Dolan Springs.....	6	—	—	6
Sacramento Valley.....	6	—	—	6
Mohave Co. General.....	2	—	—	2
NAVAJO COUNTY.....	77	—	—	77
Holbrook.....	4	—	—	4
Show Low.....	9	—	—	9
Snowflake.....	4	—	—	4
Taylor.....	2	—	—	2
Uninc. Navajo Co.....	49	—	—	49
Winslow.....	9	—	—	9
PIMA COUNTY.....	816	8	2	1,088
Marana.....	1	—	—	1
Oro Valley.....	1	—	—	1
South Tucson.....	—	—	—	—
Tucson.....	158	8	1	427
Uninc. Pima Co.....	656	—	1	659
PINAL COUNTY.....	65	—	2	75
Casa Grande.....	12	—	—	12
Coolidge.....	2	—	—	2
Eloy.....	—	—	—	—
Florence.....	—	—	—	—
Kearny.....	—	—	—	—
Mammoth.....	—	—	—	—
Superior.....	—	—	—	—
Uninc. Pinal Co.....	51	—	2	59
SANTA CRUZ COUNTY.....	N. R.	N. R.	N. R.	N. R.
Nogales.....	N. R.	N. R.	N. R.	N. R.
Patagonia.....	2	—	—	2
Uninc. Santa Cruz Co.....	3	—	—	5
YAVAPAI COUNTY.....	164	—	3	176
Chino Valley.....	9	—	—	9
Clarkdale.....	4	—	—	4
Cottonwood.....	6	—	—	6
Jerome.....	—	—	—	—
Prescott.....	16	—	3	28
Uninc. Yavapai Co.....	112	—	—	112
Prescott Valley.....	20	—	—	20
YUMA COUNTY.....	70	—	3	91
Parker.....	1	—	—	1
Somerton.....	—	—	—	—
Uninc. Yuma Co.....	55	—	—	55
Wellton.....	1	—	—	1
Yuma.....	13	—	3	54
TOTAL, Maricopa Co.,				
October, 1980.....	1,455	15	32	2,295
TOTAL, Maricopa Co.,				
October, 1979.....	1,499	27	28	2,268
PERCENT CHANGE.....	-3	-44	14	1
TOTAL, Arizona,				
October, 1980.....	3,145	27	45	4,329
TOTAL, Arizona,				
October, 1979.....	3,165	41	39	4,536
PERCENT CHANGE.....	-1	-54	15	-5

Maricopa County Retail Food Prices

NOVEMBER, 1980

Retail food prices in Maricopa County rose 0.8 percent in November following a 0.3 percent gain in October.

The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University. Cosponsor of the study is Valley National Bank. The November index of 252.2 indicates that shoppers would now have to pay \$25.22 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$22.63 one year ago. The November, 1980, index reflects an 11.5 percent increase over the November, 1979, value.

The gain in this month's index value was due to increases in the subgroups *Other Foods* (1.5 percent), *Meats, Poultry, Fish, and Eggs* (1.3 percent), *Dairy Products* (1.3 percent), and *Cereals and Bakery Products* (1.1 percent). Partially offsetting these increases was a drop in *Fruits and Vegetables* (-2.3 percent).

Sharp increases in several categories of *Other Foods* contributed to that subgroup's overall gain. Largest increases were posted in the category of sweets (excluding candy, gum, sugar, and sweeteners), which rose 8.7 percent. Similar increases occurred in the category of other canned, packaged, prepared foods (7.4 percent). In addition, higher prices for powdered soft-drink mixes were responsible for the increase of 6.0 percent for other noncarbonated beverages (excluding coffee). Falling

prices were noted for margarine (-2.5 percent) and nuts, potato chips, and other snacks (-2.5 percent).

Climbing prices for pork and beef contributed to gains in *Meats, Poultry, Fish, and Eggs* in November. Bacon prices jumped 12.4 percent, followed by sirloin steak (3.0 percent), chuck roasts (2.9 percent), and noncanned ham (2.9 percent). These increases were partially counteracted by lower prices for frankfurters (-3.3 percent), fresh or frozen chicken parts (-3.1 percent), and fresh whole chicken (-1.9 percent).

Prices in all categories of *Dairy Products* were higher this month, notably cheese (1.7 percent) and fresh milk and cream (1.2 percent). Most prices in *Cereals and Bakery Products* were also higher. Gains were posted for white bread (3.4 percent), sweet rolls, coffee cake, and doughnuts (2.3 percent), and fresh biscuits, rolls, and muffins (2.1 percent).

Seasonal fluctuations were largely responsible for price reductions this month in *Fruits and Vegetables*. Prices for tomatoes plunged -39.9 percent, followed by lettuce (-19.3 percent), apples (-18.9 percent), and potatoes (-11.6 percent). These changes were only partially offset by rising prices for oranges (13.1 percent) and bananas (10.9 percent).

A comparison of the August Food Consumed at Home Index for Maricopa County with index values for four selected metropolitan areas reveals that outlays required to purchase a foodstuffs group in August, 1980 (obtainable for an outlay of \$10.00 at 1967 average prices) were \$24.47 in Maricopa County; \$25.43 in Los Angeles-Long Beach; \$25.55 in San Francisco-Oakland; \$25.79 in Chicago-Northwestern Indiana; and \$25.63 in the United States (average).

INDEX FOR FOOD CONSUMED AT HOME
(Average 1967 = 100 percent)

Group	Maricopa County Nov. '80 ^a	Maricopa County Aug. '80 ^b	United States ^a Aug. '80	Los Angeles- Long Beach ^a Aug. '80	San Francisco- Oakland ^a Aug. '80	Chicago North- western Indiana ^a Aug. '80
Food Consumed at Home	252.2	244.7	256.3	254.3	255.5	257.9
Cereals and Bakery Products	237.3	233.5	249.2	260.1	253.2	256.2
Meats, Poultry, Fish, and Eggs	261.6	253.0	245.4	247.7	251.9	251.1
Dairy Products	220.0	211.4	229.7	224.8	223.9	226.3
Fruits and Vegetables	231.2	225.9	258.4	236.4	242.4	258.6
Other Foods Consumed at Home	281.0	272.6	307.8	303.9	312.6	310.7

^aComputed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington D.C.

^bMaricopa County food prices are reported for the month closest to publication.

^cComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. Indexes cannot be used to determine actual differences in food price levels between regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Arizona Business Index

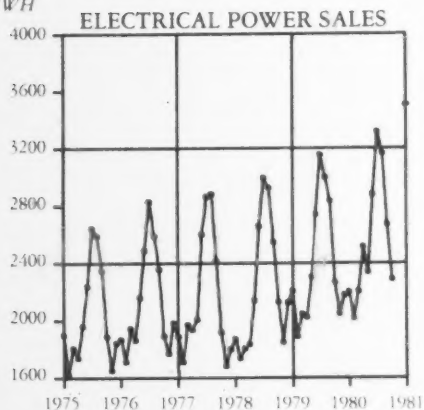
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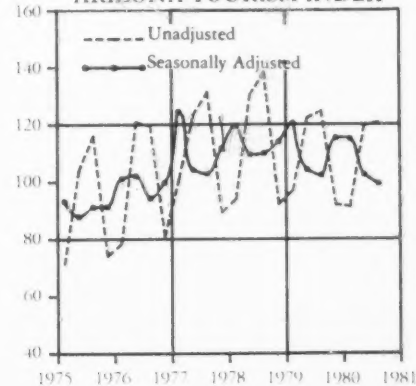
Arizona Economic Indicators

Millions
KWH



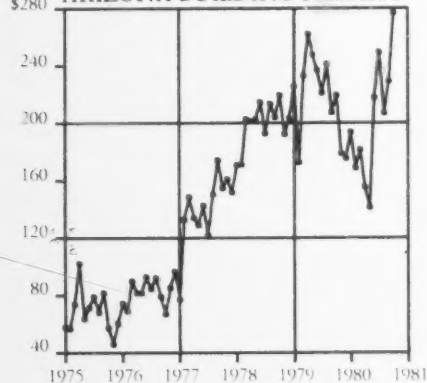
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ARIZONA TOURISM INDEX

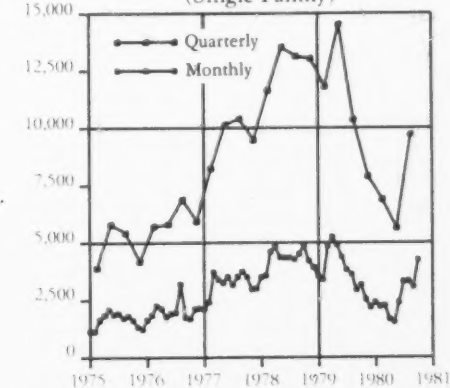


Millions

ARIZONA BUILDING PERMITS

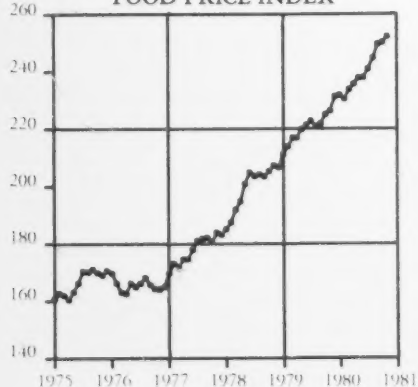


ARIZONA NEW HOUSING STARTS
(Single Family)



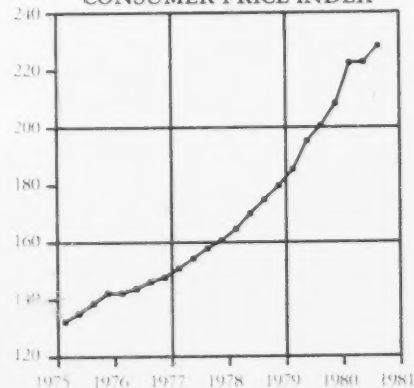
1967=100

**METROPOLITAN
FOOD PRICE INDEX**



1969=100

**METROPOLITAN
CONSUMER PRICE INDEX**



Source: All data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

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Report To The Reader

The Bureau of Business Research at West Virginia University recently announced the publication of the 1980 *AUBER Bibliography*. An excellent reference source for anyone interested in the fields of business and economics, the *Bibliography* lists over 2,400 publications such as books, articles, and monographs from 116 college and university research organizations across the United States including publications produced during the 1979 calendar year. Volume XXIV cites works from institutions of higher education in both the Association for University Business and Economic Research (AUBER) and the American Assembly of Collegiate Schools of Business.

Researchers and other users will find the *AUBER Bibliography* covering more than 125 subjects, with the largest number of entries in such categories as business and public administration, international business, marketing and advertising, regional economics, personnel management, and financial markets.

According to its editors, Stanley J. Kloc and Joan Vannorsdall Schroeder, the 304-page *Bibliography* offers potential users two distinct advantages: a large number of listings, such as working papers, not available in more traditional indexes; and an efficient subject classification system which was adapted from the American Economic Association's *Journal of Economic Literature*. In addition to subject categorization, the *Bibliography's* listings are also arranged by institution and author.

Each year, the *Bibliography* is distributed to nearly 500 colleges and universities across the United States and internationally. In addition, more than 200 business firms and government agencies regularly order copies of the book.

The *AUBER Bibliography: 1979 Publications* is available from the University Bookstore, West Virginia University, Morgantown, WV 26506. Price is \$12.50 per copy.

Limited quantities of the *Bibliography* for previous years are available as well. Once again, past issues are also obtainable in microfilm from Microforms International Marketing Corporation, Elmsford, New York.

Evaluating Inquiries on the Employment Application

GEORGE E. STEVENS

Questions asked of prospective employees can inadvertently cost a company thousands of dollars if inquiries are improperly phrased or if the questions themselves do not relate directly to the job. One large company, for example, had to pay an eventual settlement that cost more than \$1.5 million because of alleged discriminatory practices in the hiring process. Such problems can come about as a result of failure to update and evaluate interview questions and pre-employment inquiries on the employment application to ensure that the queries were completely without bias.

Definite rules must be observed when companies ask applicants to complete employment applications. Most employers realize that questions related directly to sex, age, race, color, religion, or national origin are forbidden unless they fit a special category known as bona fide occupation qualifications. However, it is the seemingly appropriate questions that can still cause problems for employers. An employer could be sued, for example, if the organization turned down an applicant because of an arrest record. Employers can be, and have been, sued for not hiring a woman because someone

decided the working conditions, travel requirements, or hours were not suitable for a female.

Most large organizations and many small ones, gather preliminary information about prospective employees from employment applications and an interview. The broad area of pre-employment inquiries is one of the most common aspects of a firm's personnel selection activities. In the recruitment and selection of personnel, organizations seek out the most qualified people for the positions available, at wage rates commensurate with the duties and responsibilities of the specific job. Conducting these activities without a knowledge of court orders, administrative decisions, and various regulations, is a risky undertaking.

This article briefly summarizes key equal employment opportunity (EEO) laws, describes the impact of EEO laws on selection, reviews the problems of pre-employment inquiries, and gives some specific recommendations for avoiding the risk of legal action. It is *not* an attempt to give specific legal advice, but, on the basis of the opinions of labor lawyers, regulatory agency staff, and EEO specialists, it may assist individuals who are involved in the selection process. In addition, this article is designed to make employers aware that items both on the application form and in the interview itself are subject to the Equal Employment Opportunity Commission's scrutiny.

The past decade has been a time of concern over the legal vulnerability of employment practices and pre-employment inquiries including employment applica-

Employers need to review their employment applications to ensure that the questions asked are relevant and pertinent.

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tions. In a recent article, Ledvinka and Gatewood¹ noted the many warnings in business periodicals and lists of forbidden questions in the popular press concerning the use of these inquiries to obtain information in the interview setting or on application. Such warnings demonstrate that the courts have become fully involved in almost every aspect of the selection process. No area is more complex or holds more potential for discrimination liability than employee selection procedures. Charges of discrimination have been levied against the full range of procedures, including recruitment, employment testing, and pre-employment inquiries. It is the selection process, however, that has been responsible for more charges of discrimination than any other area of employment practices.

Court decisions and administrative interpretations of existing legislation have made and will continue to make necessary significant alterations in many existing traditional personnel practices.² Equal employment opportunity (EEO) laws are in a constant state of change. In the brief period from mid-1978 to mid-1979, several significant developments occurred, the Age Discrimination in Employment Act was amended; the Pregnancy Discrimination Act was passed; four federal agencies jointly issued the *Uniform Guidelines on Employee Selection Procedures*; and, the President mandated the organization of federal civil rights enforcement. The level, scope, and dynamic nature of this activity complicates the already difficult task of total EEO compliance and reinforces the need for personnel specialists and others involved in the selection process to understand what is required and what is prohibited. These individuals must keep abreast of the latest developments and changes in EEO laws and regulations.

SELECTION PROCESS AND THE LAW

Obviously, employee selection is time consuming, difficult, and costly. In addition, most employers must comply with the obligation of equal employment opportunity — an obligation complicated by the myriad of laws, regulations and orders, which include the following:

Title VII of the Civil Rights Act of 1964 forbade employment or membership discrimination by employer, employment agencies, and unions on the basis of race, color, religion, sex, or national origin. It also established the Equal Employment Opportunity Commission.

The Equal Employment Opportunity Act of 1972 amended Title VII to broaden its coverage and give the

Commission (EEOC) power to bring enforcement actions in the courts.

The Civil Rights Act of 1866, Section 1981 has been used in actions to redress employment discrimination based on race, alienage, and national origin. Section 1981 does not apply to discrimination based on sex.

The Equal Pay Act of 1963 forbids pay differentials based on sex. It covers all employees who come under the Fair Labor Standards Act, plus executive, administrative, and professional employees as well as outside sales people.

The Age Discrimination in Employment Act bans employment discrimination because of age against anyone at least 40 years old but less than 70.

The Rehabilitation Act of 1973, Section 503, requires employers with government contracts and subcontracts of \$2,500 or more to take affirmative action for qualified handicapped individuals. It requires "reasonable accommodation" to the physical and mental limitations of handicapped employees and applicants. *Section 504* covers the employment practices of all recipients of federal financial assistance such as public schools, colleges, universities, and private employers operating under a federal grant.

Executive Order 11246 (as amended by Executive Order 11375) forbids employment discrimination based on race, color, religion, sex, or national origin by first and second-tier government contractors whose contracts exceed \$10,000.

Pregnancy Discrimination Act amends Title VII and states that employment discrimination based on pregnancy, childbirth, and related medical conditions is prohibited under Title VII. As interpreted by the EEOC, the amendment requires that "persons affected by pregnancy, childbirth, and related medical conditions be treated the same as persons affected by other disabilities."

While sketches of key laws have been provided above, this list is not exhaustive. People involved in the selection process must be aware of other acts, laws, and regulations such as *The National Labor Relations Act*, *The Civil Rights Act of 1971* (Section 1983), *The Vietnam Era Veterans Readjustment Assistance Act*, *Title VI of the Civil Rights Act of 1964*, *The General Revenue Sharing Act*, and the thirteenth and fourteenth amendments to the U. S. Constitution. In addition, a number of states have state fair employment practice statutes, and many cities have adopted municipal human relations ordinances.

PRE-EMPLOYMENT INQUIRIES

Fair employment practice statutes have been enacted in forty-five states, including Arizona, but coverage and provisions vary widely. For example, some of the states restrict virtually any questions relating to race, religion, sex, and the like, even the most indirect ones. Other states are less restrictive. Some states exempt questions that are asked for EEO record-keeping purposes, while others do not. The best course of action is to seek out information on the specific prohibitions of the particular state in question.

Specifically, Arizonans should be aware of the relevant provisions of the Arizona Civil Rights Act that are designed to prevent discrimination in employment. This act places restrictions on the kinds of inquiries that may be made of an applicant by employers and employment agencies. Applicable state law, however, is *not* designed to restrict the right of employers to seek full information that they consider essential nor to deny employers the right to establish job performance qualifications.

A useful source of information in Arizona is the Arizona Civil Rights Division's publication titled, *Guide to Pre-Employment Inquiries*. Selected items from the guide are shown in Table 1. However, two caveats should be offered. First, the list of questions shown illustrate those often asked by employers. Second, the guide pertains only to inquiries directed to an applicant *prior to employment*. This latter point is particularly important where employers seek proof on applicant's age or citizenship. This information should be obtained when an individual is hired subject to his being able to produce such proof of age, citizenship, or other material facts. (The point of hire is reached once the employer has decided to hire the applicant and has so informed him.)

State fair employment practice agencies are not the only ones who have something to say about pre-employment inquiries. The Equal Employment Opportunity Commission (EEOC) has taken the position that no question posed in a pre-employment interview or on an application form should be discriminatory in nature or application. Nevertheless, many organizations have failed to review their application forms to determine the appropriateness of the questions. This is a major oversight on their part. Furthermore, in its publication *Guidelines on the Employment Selection Process*, 1978, the EEOC stated that employment application forms "have traditionally been instruments for eliminating, at an early state, unsuited or unqualified per-

sons from consideration for employment and often have been used in such a way as to restrict or deny employment opportunities for women and members of minority groups."

The EEOC prohibits the use of all pre-employment inquiries and qualifying factors which disproportionately screen out members of minority groups or members of one sex and are not valid predictors of successful job performance or cannot be justified by business necessity. However, the EEOC cannot forbid an organization from including nonjob-related items on its application form. In other words, no questions are "per se" violations,³ but the EEOC looks with suspicion on certain types of inquiries — even when there is no intent to discriminate.⁴ And, if the EEOC should investigate a charge of discrimination in which pre-employment inquiries are at issue, the burden of proof is on the employer only if the complainant can establish that a particular inquiry has had a substantial disproportionate impact upon the applicant's protected group. Finally, the EEOC is one of four federal agencies which adopted the 1978 *Uniform Guidelines on Employee Selection Procedures*.

UNIFORM GUIDELINES

All people involved in the selection process should become familiar with the 1978 *Uniform Guidelines on Employee Selection Procedures*. The *Uniform Guidelines* adopt a "bottom line" concept, whereby the government will not require an employer to justify individual steps if the total selection process has no adverse impact. They go on to define *adverse impact* as a selection rate for any racial, ethnic, or sex group which is less than 80 percent of the selection rate of the group with the highest rate.

The guidelines also require records showing whether the total selection process for each job has an adverse impact on females or minorities, and if it does, records are required showing the impact of individual components. Validation studies are required when the total employee selection process has adverse impact on minorities and women and no alternative procedures without adverse impact are available. Where there is adverse impact in these individual components, evidence must show efforts to modify the procedure to eliminate the adverse impact or attempts to find alternative procedures that do not have such an impact.

Assuming an overall selection process for a given job has an adverse impact and an employer decides on validating rather than eliminating or modifying those pro-

TABLE 1

ACCEPTABLE AND UNACCEPTABLE PRE-EMPLOYMENT INQUIRIES

<i>Acceptable Pre-employment Inquiries</i>	<i>Subject</i>	<i>Unacceptable Pre-employment Inquiries</i>
Applicant's work experience.	<i>Experience</i>	Inquiry into military service of any other country.
Applicant's military experience in the armed forces of the U.S., in a state militia (U.S.), or in a particular branch of the U.S. armed forces.		
Have you ever been convicted of any crime? If so, when, where and disposition of case? (Conviction of a crime may not be an absolute bar to employment.)	<i>Character</i>	Have you ever been arrested?
Organizations, clubs, professional societies or other associations of which applicant is a member, excluding those which by their name or character indicate the race, color, religion, sex or national origin of its members.	<i>Organizations</i>	List all organizations, clubs, societies and lodges to which you belong.
Have you ever worked for this company under a different name?	<i>Name</i>	Former name of applicant whose name has been changed by court order or otherwise.
Maiden name of married female applicant, assumed name or change of name, if necessary to check educational or employment records.		
Inquiry into place and length of current and previous addresses.	<i>Address or Duration of Residence</i>	Specific inquiry into foreign addresses which would indicate national origin.
	<i>Sex</i>	If not based on a bona fide occupational qualification. (It is extremely difficult for "sex" to be considered a lawful pre-employment inquiry.)
Requirement that applicant submit a birth certificate or other proof of legal residency after employment.	<i>Birthplace</i>	Birthplace of applicant, applicant's parents, spouse or other relatives; requirement that applicant submit birth certificate, naturalization or baptismal record.
Requirement that applicant submit a birth certificate or other document, after employment, as proof of age.	<i>Age</i>	Requirement that applicant produce proof of age in the form of a birth certificate, baptismal record, or Employment Certificate or Certificate of Age issued by school authorities.
Request applicant to state the status of his/her residency. (a) Citizen of U.S. (b) Legal right to remain permanently in the U.S. Statement by employer that, if hired, applicant may be required to submit proof of citizenship.	<i>Citizenship</i>	Of what country are you a citizen? Inquiry whether an applicant or parents or spouse are naturalized or native born U.S. Citizens; the date when the applicant or parents or spouse acquired citizenship; requirement that applicant produce naturalization papers or first papers.
Inquiry into the academic, vocational or professional education of an applicant and the schools he/she has attended.	<i>Education</i>	Any inquiry asking specifically the nationality, racial or religious affiliation of a school.

*These inquiries are considered unacceptable unless the employer can prove they are valid predictors of job success.

Source: Examples taken from *Guide to Pre-Employment Inquiries Under the Arizona Civil Rights Act*. (Phoenix, Arizona: Arizona Civil Rights Division, 1977). The Guide is intended for general information only. It does not carry the force of legal opinion.

cedures with the adverse impact, then compliance with the guidelines requires the employer to —

first, maintain evidence (a validation study) showing the validity of each component that has an adverse impact. This evidence must be in terms of criterion-related validity, content validity, construct validity, or evidence from other studies demonstrating the validity of the procedure.⁵ The employer must also prepare, or have prepared, a report on each validation study so that an evaluation of validity can be made. Location and dates of the study, job analysis or review of job information, techniques and results of the study, and the relationship between the procedure and job performance are the kinds of information required for such reports.

These procedures apply not only to tests but to all selection procedures used as a basis for any employment decision, such as hiring or promotion. Questions and answers concerning the guidelines and a more detailed explanation of these guidelines may be found in *Analysis of Uniform Guidelines on Employee Selection Procedures*.⁶

In addition to the guidelines and relevant equal employment opportunity laws, the employer must be knowledgeable about rapidly evolving case law and critical court decisions. In particular, employers should realize that the guidelines are not the final word. For example, several recent Supreme Court decisions have not been in accord with these guidelines.⁷ Listed in

Table 2 are some important court decisions in unfair discrimination. All of these are U.S. Supreme Court decisions.

A useful guide to recent judicial decisions made by the circuit courts and Supreme Court is *Equal Employment Opportunity Court Cases*.⁸ This government publication provides facts, key issues and discussion of suits brought under provisions of the United States Constitution and the various civil rights statutes. In addition, several important source materials cover the legal matters in employment discrimination. One such source is the Commerce Clearing House Publication⁹ of *Employment Practices Decisions*, which discusses various court decisions. An excellent source is the Bureau of National Affairs¹⁰ which publishes the texts of state and federal laws along with explanations of these laws, texts of the governmental directives and agencies' guidelines, and a case law book, *Fair Employment Practices*. These latter materials, which are updated every two weeks, include full texts and opinions of federal and state court rulings pertaining to employment discrimination.

PRECAUTIONS

In the face of the increasingly complex legal restrictions regarding employee selection, one might ask if there are any precautions to guarantee that an employer will stay out of trouble with pre-employment inquiries. Unfortunately, there is always an element of legal risk so there can be no such guarantees. The following steps,

TABLE 2
IMPORTANT COURT DECISIONS IN UNFAIR DISCRIMINATION

Date	Case	Relevant Aspects of Decision
1971	Griggs v. Duke Power	Once adverse impact is established, organizations must demonstrate that selection practice is valid.
1975	Albemarle v. Moody	Validation study shown to be "materially deficient" when compared to EEOC guidelines on testing.
1976	Washington v. Davis	When test challenged under constitutional law, intent to discriminate must be established. Validation study upheld.
1977	Dothard v. Rawlinson	Height requirements were not valid and therefore illegal. Reinforced role of statistics in establishing adverse impact under Title VII cases.
1977	Trans World Airlines v. Hardison	"Reasonable Accommodations" need not require organizations to violate union and seniority systems in order to accommodate religious observances.
1978	Bakke v. Regents of the University of California	Reverse discrimination not allowed; Bakke must be admitted to medical school. Race may be taken into account as an element to be considered in selection decisions. Affirmative action programs permissible when prior discrimination has been demonstrated.

Source: Richard D. Arvey, *Fairness in Selecting Employees*, p. 224.

however, can make the selection process in general, and pre-employment inquiries in particular, more defensible.³

- Pinpoint any question that might possibly tend to identify an applicant as a member of a protected group or disqualify or disfavor an applicant of a protected group. Such questions are problem questions.

- Decide whether there is sufficient justification for such questions. Are they related to the jobs being applied for? Are the questions legally defensible?

- When questionable inquiries must be made, indicate on the application form that they will not be used to discriminate. (Applications frequently include a footnote that age questions will not be used to discriminate against any applicant.)

- Consider a two-phase inquiry: pre-hiring and post-hiring. Some information is not needed to make the hiring decision and can wait until the applicant is hired. Much of this information (e.g., age, sex, marital status) when asked *before* hiring is suspect.

- Keep a separate file of race, sex, and handicapped status information needed for EEO record keeping. Although such information can be collected before hiring

in most states, be sure that it is *not* coded on the applicant form.

- Try to minimize subjectivity and intuitive judgments that cannot be defended on the basis of a relationship to job performance. Be explicit in stating the relative importance of information, and make decision rules clear.

- Conduct valid research in an attempt to substantiate those employment application questions which the organization deems necessary for the proper operation of the business or which it believes can be substantiated as bona fide occupational qualifications (BFOQ). Some examples of BFOQ exceptions are the Federal Aviation Agency regulation setting a ceiling age for pilots, and sex as a BFOQ in the hiring of a men's room attendant.

Several steps have been mentioned that might help employers make their application forms court proof. One basic step remains. In some cases, a simple alteration of a question presently asked may minimize the legal risk. In Table 3 several inappropriate pre-employment inquiries are identified. The inquiries are rephrased to be more appropriate.

TABLE 3

SELECTED INAPPROPRIATE QUESTIONS AND RECOMMENDED SUBSTITUTIONS

Inappropriate Questions

1. Do you have any physical defects?
2. Have you had any recent, or past illness or operations?
3. What was the date of your last physical exam?
4. Are you a U.S. Citizen?
5. Date of Birth?
6. Age?
7. Emergency Information: (Relationship)?
8. Do you possess a legal driver's license?
9. What are your hobbies? Interests?
10. Have you ever been convicted of a misdemeanor or felony?
11. Dates attended High School? Grammar School?
12. Date graduated or last attended High School? Grammar School?
13. In what extra-curricular activities did you participate? Clubs?
14. College subjects of interest?

More Appropriate Questions

1. Do you have any physical defects, or impediments which might, in any way, hinder your ability to perform the job for which you have applied?
2. Have you had any recent or past illness or operations which might, in any way, hinder your ability to perform the job for which you have applied?
3. Are you willing to take a physical exam at our expense if the nature of the job requires one?
4. Do you have the legal right to live and work in the U.S.?
5. Are you over 18 and less than 70?
6. Are you over 18 and less than 70?
7. Emergency Information: Name, Address, Telephone No.
8. Only for applicants who desire a job driving a company vehicle: Do you possess a legal and current driver's license?
9. Do you have any hobbies or interests which have a direct bearing on the job you are seeking?
10. Have you, since the age of 18, ever been convicted of a misdemeanor or felony? (Note: A conviction will not necessarily bar you from employment. Each conviction will be judged on its own merits with respect to time, circumstances and seriousness).
11. Did you complete Grammar School? High School?
12. Same as item 11.
13. While in school, did you participate in any activities, or belong to any clubs, which have a direct bearing upon the job for which you are applying?
14. While in college, did you take any courses that directly relate to the job for which you are applying?

Source: E.C. Miller, *Personnel Administrator*, March 1980, p. 68.

CONCLUSION

This article has attempted to make Arizona business people and others aware of the dramatic and rapidly evolving federal and state statutes, judicial decisions and EEO regulations which affect the employee selection process. In particular, people should realize how vulnerable both the interview and the employment application are to enforcement agencies' scrutiny. In addition, some suggestions have been offered that will help an employer "court proof" his employment application. Finally, a number of references have been provided so that personnel professionals and others involved in selection may keep abreast of the laws.

It is in the best interest of the organization to carefully review its own application forms to deter-

mine the appropriateness of the pre-employment inquiries. Before including any inquiries on an employment application form the employer should know whether the question is in conflict with the guidelines or court decisions, whether the question is in conflict with the spirit and intent of the Civil Rights Act and other statutes, and whether the question really has anything to do with the job the applicant is seeking. Another important aspect to consider is whether the mere inquiry constitutes an invasion of the applicant's privacy. These and similar issues must be considered. The best approach is to work to eliminate or alter any employment application question which might make the employer vulnerable to charges of unfair discrimination¹¹ and the attendant expensive and time-consuming legal proceedings.

¹For a more detailed discussion of key EEO laws, see W. P. Murphy, J. G. Getman, and J. E. Jones, *Discrimination in Employment* (4th Ed.), J. E. Jones, *Reference Supplement-Discrimination in Employment*, (Washington, D.C.: The Bureau of National Affairs, 1979).

²See W. H. Holley and H. S. Field, "Equal Employment Opportunity and Its Implications for Personnel Practices," *Labor Law Journal*, Vol. 27, No. 5, 1976, pp. 278-286, for a discussion of EEO's impact on personnel practices.

³J. Ledvinka and R. D. Gatewood, "EEO Issues with Pre-Employment Inquiries," *Personnel Administrator*, February, 1977, pp. 22-26.

⁴E. C. Miller, "An EEO Examination of Employment Applications," *The Personnel Administrator*, March, 1980, p. 64, states that there is a single "forbidden" item — any inquiry on arrest records.

⁵The three specified types of validity may be defined as follows: 1. Criterion-related validity — showing that those who score high on a particular test or selection standard usually turn out to be successful on the job, and those who score low are usually unsuccessful; 2. Construct validity — showing that a test or selection standard measures some characteristic that is clearly needed for the job; and 3. Content validity — showing that a test is an actual sample of the

work to be done.

⁶M. G. Miner and J. B. Miner, *Analysis of Uniform Guidelines on Employee Selection Procedures*, (Washington, D.C.: The Bureau of National Affairs, 1979).

⁷See R. D. Arvey, *Fairness in Selecting Employees* (Reading MA: Addison-Wesley, 1979) pp. 223-240 for a discussion of key court decisions in unfair discrimination, recent developments and trends.

⁸*Equal Employment Opportunity Court Cases* (Washington, D.C.: U.S. Office of Personnel Management, Office of Intergovernmental Personnel Programs, 1979).

⁹Commerce Clearing House Publication (4025 W. Petersen Ave., Chicago, IL).

¹⁰Bureau of National Affairs, Inc. (1231 25th St., N.W. Washington, D.C.).

¹¹The basic objective in selection is to discriminate; that is, to provide a means by which to select some people and reject others. Unfair discrimination or bias is said to exist when members of a minority group have lower probabilities of being selected for a job when, in fact, if they had been selected, their probabilities of performing successfully in a job would have been equal to those of nonminority group members.

Subscription Television and its Effect on the Movie Industry

RICHARD F. BELTRAMINI
JANET BREITENDUCHER

The two main forms of mass visual entertainment in the United States are television and motion pictures. Both industries are in the process of change, but while the changes in television are mainly technological, the changes in the film industry are primarily financial and organizational and result in part from the impact of television.

The two media are basically competitors for the entertainment attention of the American public. The development of subscription television, however, has accentuated this competition, and the motion picture industry is being forced into diversification and reorganization of management and marketing.

This article describes some of the trends in subscription television and analyzes some organizational and financial problems in the motion picture industry. The effects of the television trends are then discussed with respect to the future of the motion picture industry.

While subscription television is expanding rapidly, the motion picture industry is experiencing a variety of financial and organizational problems. The movie industry is responding to the competition by innovation and diversification.

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TELEVISION TECHNOLOGY

The communications industry is working hard to make the television set a medium for home entertainment that is affordable for almost everyone. It is no longer a medium marketed only to mass audiences, but it is taking on new directions that will appeal to various segments of viewers.

Technology is increasing, and the television set is quickly becoming a versatile part of everyday existence. A videocassette player/recorder can tape a program and play it back when desired. Commercials can be erased while shows are being recorded. Videodisk players can play prerecorded programs through the television set. Several movie companies have put some of their films on videotape, which can be rented or purchased for use at home. New brands of television sets can be programmed in advance to switch to certain channels at the programmed time (so the viewer will not have to change channels), to turn lights on and off, or to answer the telephone. A Japanese manufacturer recently demonstrated a television set that can be controlled by talking to it.

An individual can have a theater at home with a choice of television sets that have screens as small as 1½ inches diagonally or projection models with screens as large as 25 feet. With some guidance from *Popular Mechanics* an individual can build a big-screen television set for less than \$500. Kits are also available that

will help turn a 13-inch color TV into the heart of a one-piece projection TV.

A look into the future may see television stations broadcasting in stereo and televisions linked to computer data banks via telephone lines. For example, an experiment in Coral Gables, Florida, is being conducted this summer in 150 homes to test this concept.

TRENDS IN SUBSCRIPTION TELEVISION

When the Federal Communications Commission (FCC) dropped its limit on the number of signals from distant television stations that cable systems were permitted to receive and transmit, the cable television industry began rapid growth. Just recently the FCC freed cable TV from most of the last remaining government regulations. Now cable companies can carry as many channels as they choose, where previously they were limited to transmitting the programs of just a few stations outside their franchise areas. Companies no longer have to black out syndicated programs, even if the local over-the-air stations have paid for exclusive rights. A few limitations remain, however. Cable TV cannot transmit regional sports events that over-the-air stations in the area had to black out; and cable TV cannot air a national network production on one of the extra cable channels at the same time a local network affiliate is showing it.

Cable television, currently reaching 20 percent of the country's 73 million households, is predicting 30 percent saturation by late 1981. Increasing at a compound annual rate of 7.4 percent, the number of subscribers may approach 20 million by 1983 (see Table 1).

TABLE 1
CABLE TELEVISION OPERATION
SYSTEMS AND SUBSCRIBERS

Year	Operating Systems	Total Subscribers	Percent of TV Households
1978	4,030	12,900,000	17.7
1977	3,801	11,900,000	16.7
1975	3,450	10,800,000	15.5
1974	3,158	8,700,000	13.0
1973	2,991	7,300,000	11.1
1972	2,655	6,000,000	9.6
1971	2,570	5,300,000	8.7
1970	2,490	4,500,000	7.6
1965	1,325	1,275,000	2.4
1960	640	650,000	1.4

Note: Data for 1976 is not available.

Source: *International Television Almanac*, 1979, p. 144.

The cable industry sees its future in the additional revenue from subscription television. Basic cable service costs approximately \$7 to \$10 per month for up to 36 channels, although a system is currently being proposed for receiving as many as 120 channels. For an additional charge of \$8 to \$10 a subscriber can get commercial-free, unedited movies and sporting events from various companies.

Programming is chiefly distributed nationally by satellite. Signals are received at earth stations and retransmitted to area cable systems. Signals are also distributed through some type of microwave transmission networks as regular cable TV.

The major suppliers of subscription television are Home Box Office, a subsidiary of Time, Inc.; and Showtime, a joint venture of TelePrompster and Viacom International. Time's Home Box Office serves approximately 2 million households nationwide, while Showtime serves about 600,000 (see Table 2).

Basic subscriber revenues, not including program subscription fees or income from advertising or other services, were estimated to have reached \$1.5 billion in 1979, a 21 percent increase from 1978 (see Figure 1). A 16 percent increase is forecast for 1980 to \$1.69 billion, and \$2.3 billion by 1983, with revenues from subscription television adding about \$850 million.¹

In May, 1979, the FCC Chairman, Charles Ferris advised the cable industry to offer marketable, diversified programming if it intends to survive in an increasingly competitive environment. He recommended the delivery of diversified and specialized services that reflect the needs of all of the viewers.² Whereas the television industry in the past was encouraged by Washington to offer programs that appealed to the mass audience, narrowcasting has been the approach of cable TV. Cable executives say most programs will be geared to the interests of specific audience segments, creating a "big audience by combining a lot of little audiences."³

Marketing Techniques of Subscription Television

Marketing techniques of subscription television are being continually reevaluated and redesigned as marketers become increasingly sophisticated in this new industry. Cablevision is marketing its service by offering a number of different program packages for varying prices. In January of this year Chicago received its first taste of cable television. Cablevision's program at that time included Home Box Office or Showtime, two of its own movie packages (Action Plus and Weekend Cin-

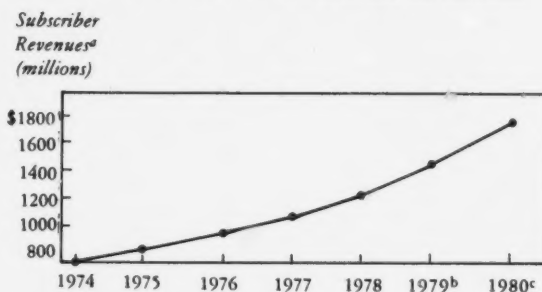
ema) and its own sports package. To facilitate the marketing of these services, Cablevision used the Oak Total Control Scrambler system that links set-top converters to a central computer that can turn on or off any service in any home.⁴

ON-TV in 1979 chose to spend approximately \$2,000,000 a year on promotion, advertising and marketing. Fast growth is the objective, with the ever increasing competition from subscription television companies. Executives are hoping to keep a wide spectrum of programming, repeating movies an average of six times over a three-month period rather than ten times or more, as other systems do.⁵

Home Theater Network (HTN) is attempting to create a particular image as a quality, family movie channel

FIGURE 1

CABLE TELEVISION SUBSCRIBER REVENUES



^aEstimated basic subscriber revenues only. Does not include program subscription fees, or income from advertising or other services.

^bEstimated

^cForecast

Source: Federal Communications Commission. Estimates and forecasts by Industry and Trade Administration (BDBD).

TABLE 2

SUBSCRIBERS AND MARKET SHARE OF SUBSCRIPTION TELEVISION

Distributor/Booker	Number of Subscribers		Percentage Share of Market	
	June, 1979	December, 1979	June, 1979	December, 1979
Home Box Office	2,889,100	4,007,432	6.02	62.5
Showtime	719,699	963,615	15.0	15.0
National STV (Perenchio)	179,639	269,056	3.8	4.2
T-lemation PGM Services	303,103	264,849	6.3	4.1
Self-booked Systems	181,080	260,053	3.8	4.1
Movie Channel (Warner)	143,716	186,835	3.0	2.9
Hollywood Home Theatre	202,081	170,887	4.2	2.7
Wometco Home Theatre	52,129	73,457	1.1	1.2
VU-TV (Formerly Best Vision)	35,143	66,031	0.7	1.0
American STV	25,000	37,500	0.5	0.6
Home Theatre Network	16,205	35,727	0.3	0.6
Starcase	—	33,200	—	0.5
Optical Systems	25,938	23,962	0.7	0.4
Pay TV Services	22,908	8,817	0.3	0.1
Cinemerica	5,511	5,040	0.1	0.1
Galavision	—	2,004	—	—
TOTAL	4,801,487	6,408,465	100.0	100.0

Source: Paul Kagen Association, Inc.; *The Pay TV Newsletter*; April 11, 1980, p.2.

offering G and PG movies and running advertisements directed toward this target audience. The distinctive movie frame border and a new format in scheduling — the Double Premiere Week — are methods being used to position HTN in the subscription television market. In the regular schedule HTN features one film each week, premiering it on three nights and bringing it back two weeks later on Friday night. Double Premiere Week offers one movie that plays Monday and Tuesday and is brought back two weeks later on Friday night; the second movie premieres Wednesday and Thursday nights, and returns two weeks later on Saturday night. Promoters are running spots up to three minutes each, occasionally before the movie begins, to inform customers of schedules, how films are selected and how to obtain the most value from HTN's service.⁶

HBO's central theme in marketing is "HBO people don't miss out." Jim Heyworth, new president of the company, believes the future is bright for his company and his industry. He sees the necessity of remaining in touch with his audience and the cable television mix they want, in order for growth of the network to continue. A new priority in 1981 will be to develop additional services and to increase the national awareness of HBO.⁷

The programming umbrella concept is being used by Jim Miller, director of Showtime's program administration. The system places many of Showtime's movies and original productions under recognizable umbrella titles or categories such as classic films, fast-moving action/adventure or romance, after-hours programs,

and family theater. The objective is to develop a clear idea of the programming Showtime has to offer. Showtime is also emphasizing major movie titles, with at least one major title offered every month.⁸

Television Viewing Time Is Increasing

Increasing technology in the television industry and the growth trend in the cable industry are making the home a video center all its own.

Nielsen's studies in 1959 revealed that the average television viewing, per home per day, totaled four hours and 58 minutes. In 1979 the average television family watched six hours and forty-five minutes of television every day (see Table 3).

TABLE 3

HOUSEHOLDS WITH TELEVISION SETS 1950-1979

Year	Total Households (thousands)	Households With TV Sets (thousands)	Percentage of Total	Average Viewing Per Day (hours)
1950	43,000	3,880	9.0	4.6
1955	47,620	30,700	64.5	4.9
1960	52,500	45,750	87.1	5.1
1965	56,900	52,700	92.6	5.5
1970	61,410	58,500	95.3	5.9
1975	70,520	68,500	97.1	6.1
1976	71,460	69,600	97.4	6.3
1977	73,100	71,200	97.4	6.2
1978	74,700	72,900	97.6	(NA)
1979	76,240	74,500	97.7	6.3

Source: *Statistical Abstract of the United States*, 100th Edition, p. 587.

In December, 1979, a Nielsen report — Nielsen's first on national pay cable audiences — placed cable fourth in prime time viewing, behind the three commercial networks. David Harkness, Nielsen business development marketing manager, told a subscription television seminar that "subscribers to pay TV are not necessarily dissatisfied with commercial TV. On the contrary, they enjoy television so much, they want more."⁹

Esquire magazine conducted a survey of video-cassette recorder owners. Out of 4,100 names taken from warranty cards, 2,497 replies were received. The results indicated that current movies were first choice for viewing, movie classics second, sporting events third, situation comedies fourth, and documentaries, public affairs and adult education programs fifth.¹⁰

CABLE TV IN PHOENIX

Microwave subscription television in Phoenix began with 200 homes in the early part of 1978, progressed to 2,300 homes by October, 1978, and currently serves approximately 23,000 homes, according to Thomas Crosby, president of American Cable Television. Cable subscription television today includes 8,500 total hook-ups in 4,102 homes. Crosby projects an increase of 4,000 per month until June, 1981, and then an increase of 6,000 per month through the end of 1982.

American Cable Television (ACT) recently reached an agreement with Times-Mirror Cable Television in which Times-Mirror has purchased a 20 percent interest in ACT.¹¹ In June, the Phoenix City Council ruled 4 to 3 to issue additional citywide licenses to two competitors, Storer's Camelback Cablevision and New Jersey-based Cross Country Cable. A third license was granted to Western Cable, a new firm wiring a small 14 square mile portion of northeast Phoenix.

ACT's license was granted four years ago, but it became operational this July. Construction was started in January, and so far ACT has wired approximately 500 miles of Phoenix. The funds ACT is receiving from Times-Mirror will be used to finish wiring the city.

Storer's Camelback Cablevision expects to spend \$94 million in wiring the whole city, and has begun construction of a forty-four channel system in south Phoenix. Cross Country feels it will take at least \$60 million to wire the entire area, and hopes to install a fifty-two channel system.

TRENDS IN THE MOVIE INDUSTRY

While the subscription television industry seems to be thriving, the movie industry is subject to some factors that could influence its future health. According to *Variety*, the total United States summer box office receipts in 1980 totaled approximately \$940 million, a drop of nearly 2 percent from summer, 1979. The overall ticket inflation rate for the summer period of this year was approximately 6½ percent. Thus, the real box office drop this year was in the range of 8 percent.¹²

Expenses are also increasing rapidly. Costs for union production personnel have risen. Production costs alone for 1979 were up 200 percent per major movie studio over the last seven years. Expenses for studio overhead and maintaining a distribution system have also contributed to the cost of films.

Although 1979 domestic box office revenues were expected to rise 7.4 percent, the increase was entirely

due to higher ticket prices which have gone up 8 percent. Comparisons for the first six months of 1979 against the same period in 1978 show an increase in domestic revenues of 4.8 percent, but attendance dropped an estimated 3 percent. In 1978, box-office gross climbed almost 12 percent to \$2.653 billion, from \$2.372 billion. The gain was a reflection of increased admissions and higher ticket prices (see Table 4).

TABLE 4

*PERFORMANCE OF FILM PRODUCERS IN 1978

	Revenues (Millions\$)		Income (Millions\$)	
	1978	1977	1978	1977
Universal (MCA, Inc.)	724.4	561.4	159.8	107.4
Columbia Pictures	437.0	298.3	80.1	30.8
Twentieth Century-Fox	408.0	369.4	91.9	69.7
Warner Communi- cations	393.0	353.2	79.9	58.0
Paramount (Gulf & Western)	384.0	232.0	N.A.	N.A.
United Artists (Transamerica)	370.0	378.2	55.6	60.2
Metro-Goldwyn- Mayer	182.6	139.2	39.0	26.6
Walt Disney Productions	152.1	118.1	54.1	46.1

*Includes movies and television.

¹Before taxes and unallocated corporate expenses.

Source: *Standard & Poors Industry Surveys*, April, 1980, p. L28.

Theater admissions reached 1,133 million during 1978, surpassing 1977 by almost 7 percent. It was the highest number of admissions since 1961, when attendance was 1,225 million.¹² For the first three months of 1980, the Motion Picture Association of America reported that attendance was down 2.5 percent with 264.8 million people attending compared to 271.6 million in 1979.¹⁴ Theater attendance in the United States has increased less than 20 percent during the past ten years.

Blind Bidding

Besides rising costs and declining attendance, another major concern of movie studios is the drive by

exhibitors to outlaw blind bidding. In blind bidding, theater owners receive a summary which describes the plot of a movie and lists the stars and the director. With this information they bid on a movie without ever having seen the film and agree to play the movie a specified number of weeks. In some instances a theater owner offers a cash guarantee, which may result in a loss if the movie turns out to be unsuccessful and the theater owner has agreed to run it for a period of time. Approximately 75 percent of all major films are bid in this manner.

The movie companies, on the other hand, need blind bidding. It is necessary because of huge production and advertising costs. Without blind bidding, release dates of films would be delayed and interest expense incurred on borrowed money would mount up. Movie companies would be less inclined to put a great deal of money into a film if they were not assured of showing dates in theaters. They would probably be less willing to be creative on artistic or experimental films. Ticket prices on successful films would skyrocket. Theater owners claim they may be forced into bankruptcy unless blind bidding is prohibited. They feel they will need to raise their ticket prices to make up some of the losses.

The issue of blind bidding is presently being debated in the state legislatures. Approximately fifteen states have passed legislation forbidding blind bidding.¹⁵ If more states pass legislation to protect theater owners, the risk will be shifted back to the studios.

Theater Growth

In 1978, there were an estimated 12,275 theaters in the United States, 20 percent of all theaters having more than one screen. Between 1976 and 1978 the total number of theaters declined 1 percent, but the number of screens increased 8 percent. The most recent figures available from the National Association of Theater Owners reveal that in July, 1979, there were 16,965 screens in operation.

The trend today is toward four and six auditorium complexes. Indoor construction today consists of auditoriums seating 350 to 500 in multiple complexes. The goal is to completely sell out one auditorium and pick up an overflow into adjoining satellite auditoriums. People who want to see a specific film will probably come back; meanwhile they may have bought refreshments and may have seen another show.

Interest rates are high and obtaining financing for

construction may be difficult as banks generally avoid financing one-purpose buildings. As a result, theater owners may have a difficult time building new structures. With the possibility of the economy getting worse rather than better, theater owners may have to think about alternate uses for the theater and should incorporate appropriate facilities during the design phase of their building.

As the population shifts to the suburbs, most theater companies are considering shopping centers as prime locations. This usually involves leasing facilities, which frees the theater owner's working capital for improvements and future acquisitions.¹⁶

HOW SUBSCRIPTION TELEVISION TRENDS AFFECT THE MOVIE INDUSTRY

For the motion picture industry as a whole, subscription television developments provide both good and bad news. For expanded distribution of films by the major movie studios, the news is good. By 1985 the cable industry predicts the number of subscribers will reach 35.6 million. John F. Berry, publisher of *Box Office*, feels the demand for programming will continue to grow as the cable industry grows, with movies being the main source of entertainment.

However, competition for the entertainment dollar will increase as more communities become serviced. Berry believes aggressive marketing, and the increased availability of first run movies to the American family via cable, pose a growing threat to theater owners.¹⁷

Film companies earn revenue not only from film rentals, but also from cable, cassette, and disc earnings. Opinions within the movie industry indicate that diversification of the studios into other areas has made the industry more stable, and less dependent on the blockbuster movie to ensure a good year.

While after-markets such as network television, syndication, pay television, and video cassettes and discs provide potential sources of new income, the industry holds that the success of a film in theatrical distribution creates the demand for all the other ancillary markets. The consensus seems to be that the prime objective of the movie industry must remain the production of theatrical films. But as film budgets increase and admissions drop, the question is, Will there be enough money from the ancillary business to cover costs?

With rising costs of theater tickets, gasoline, babysitters, parking, compounded by the availability of good movies at home on subscription television, people may be more inclined to stay at home. Others feel the lure of an evening out will always be there.

Michael Fuchs, programming vice-president of HBO, said recently of the impact of subscription television on the movie industry, "Tens of millions of dollars have been committed by HBO to prebuys of more than 100 films." These films are to run over the next five years. Seemingly preproduction commitments such as these will help the movie industry by providing larger budgets than they would normally have available via traditional distribution. Fuchs cited figures that showed 40 percent of Americans never or almost never go to the movies, and HBO is picking up substantial numbers of that audience. He assured theater operators that they would be the first to receive feature films, however, which he feels is essential to the marketing of subscription television.¹⁸

The motion picture theater can supply entertainment unequaled in a home. The home video that imitates the theater experience is affordable only to upper income families at this point in time. George H. Wead and Thomas G. Schatz, assistant professors of radio-television film at The University of Texas at Austin, explored the future of motion pictures with distinguished film director, Edward Dmytryk.¹⁹ Based on their work, Wead stated that movies still provide what television will never provide — the big image, the great experience. Spectacular films such as "Jaws," "Star Wars," and "Close Encounters" fare best at the box office. Part of the appeal of movies may come from a psychological demand for shared public images, theorized Wead. Thus, home movies may never substitute for the movie theater experience.

THE FUTURE

In order to respond to the competition of expanding television technology and the new growth of subscription television, movie industries seem to be placing emphasis on the reorganization of management and marketing, and concentrating on income growth in other areas.

Walt Disney Productions recently put together a new management structure to create and develop new programs and projects. Several new divisions were formed such as: Walt Disney Motion Picture and Television Production; Walt Disney Outdoor Recreation Division; and Walt Disney Marketing Division.²⁰ Last year about 60 percent of Disney's total income was derived from outdoor recreation such as Disneyland, while only 20 percent came from motion pictures.²¹

Metro-Goldwyn-Mayer (MGM) has just split into two entities, MGM Filmco and MGM Grand Hotels,

Inc. Filmco will soon be announcing its entry into the fields of videodisc and videocassette, and plans to release twelve to fifteen pictures per year with the possibility of increasing production beyond that. Frank E. Rosenfelt, chairman and chief executive officer of MGM Filmco, intends to expand their series and movie-of-the-week activities. "We intend to become a major contributing force within the industry," he said.²²

Craig Miller of Lucasfilm Ltd. claims a marketing approach that encourages fanaticism. He makes science fiction films popular by an advertising medium called "compulsion of mouth," whereby you feel inferior if you have not seen the film. When the movie is over he sees to it that the compulsion lingers by letting fans know what their stars are doing, by assembling and performing promotional presentations, and by fan clubs. Fan clubs maintain interest in the movies and bring viewers back to see the show another time. Miller believes studios need to be more aware of the public.²³

At the end of 1978 Paramount had been successful with a string of twenty profitable movies in a row. Convinced that marketing of movies was too standardized, Paramount localized its promotions by hiring local advertising agencies. It tailored its marketing program to fit the audience at which the movie was targeted. "Saturday Night Fever," for example, was promoted through music. Brochures on the film were prepared to accompany sound-track albums that were sent to radio stations and read to teenage audiences by the disc jockeys. Wider releases of films have become the rule, rather than the exception.²⁴

Alan J. Hirschfield, vice-chairman of 20th Century-Fox, told the Academy of Television Arts and Sciences recently that it is "unlikely theatrical revenues will grow" in the future, and that "it's clear the FCC is using cable as the ultimate weapon to control the networks."²⁵ According to Hirschfield, 36 million homes have cable now, 57 million will have cable in 1985, and 70 million in 1990. Approximately 70 percent of these cable homes also subscribe to pay television.

Hirschfield protested the fact that movie studios cannot own cable systems, which severely limits their abilities to capitalize on the home video market. He expects this market to grow to 10 million units by 1985. He continued that the industry "must be allowed to

compete freely" or history proves "we're going to be left behind."²⁶

As he explained, the average cost of movie features today is in excess of \$8.5 million, plus \$6.5 million in marketing expenses. This means that movie companies have to attract box-office audiences of 12 or 13 million merely to "get our money back." According to Hirschfield, about 20 percent of the gross revenues from these movies shown on subscription television go to the movie companies, while the middlemen (HBO and Showtime) receive about 30 percent, with the remaining 50 percent going to hardware system owners.

SUMMARY

As television technology has become more advanced, new options are offered to the American movie viewer. FCC rulings and aggressive marketing by the cable companies have helped subscription television grow, posing new competition for the movie industry. Attendance in movie theaters is down. Blind bidding has received a negative ruling in fifteen states, posing financial problems for the movie industry.

As subscription television grows, so does competition for the entertainment dollar. The movie industry is responding by diversification. Ancillary markets offer new sources of revenue that are sharing some of the financial burdens of the industry. However, the movie industry faces high costs, and it is questionable whether diversification can cover the increasing costs of film production. Technical versus human processes that affect productivity in production, distribution, and exhibition levels must improve in order to restore a more cost-effective industry.

Management reorganization and new marketing techniques, along with new technologies, may partially remedy the ailing movie industry. New management structures, product diversification, and regional marketing communications programs have been relatively successful thus far. However, the challenge remains to harness technology innovatively and to market an entertainment experience not possible within the home, if the movie industry's future is to parallel that of subscription television.²⁷

¹U. S. *Industrial Outlook* 1980, p. 443.

²"Good Fare a Must for Strong Cable Future: Ferris," *Advertising Age*, May 28, 1979, p. 73.

³Niles Howard, *Duns Review*, October, 1979, p. 74.

⁴"Cable Moves into Chicago Suburbs," *Broadcasting*, January

14, 1980, p. 43.

⁵John G. Watson, "Pay TV is Cashing in on the Western Market," *Advertising Age*, March 26, 1979, pp. S28-S29.

⁶"The Fastest Growing Pay Service in the Industry is Strengthening its Image Nationwide," *TVC*, May 15, 1980, pp. 123-125.

⁷Arthur Hill, "Facing Competition: Home Box Office in the '80s," *TVC*, April 15, 1980, pp. 56-57.

⁸"Showtime's Revamped Philosophy Explained In Closed Circuit Address to National Affiliates," *TVC*, April 1, 1980.

⁹Bob Marich, "Pay Cable Posts Strong Showing in Nielsen Study," *Advertising Age*, December 17, 1979, p. 10.

¹⁰Ethel Greenfield Booth, "Cable and Home Video: Where's the Connection?" *TVC*, May 1, 1980, p. 60.

¹¹"Times Mirror Buys 20% of Phoenix' ACT, Loans Firm \$5 Million to Build City," *TVC*, August 15, 1980, pp. 21, 24, 25.

¹²"Summer B. O. Tally Off 2%," *Variety*, September 3, 1980.

¹³*U. S. Industrial Outlook* 1980, p. 493.

¹⁴Pamela Moreland, "Analysts Cautious of Bad Times Theory for Movie Stocks," *Los Angeles Times*, May 18, 1980, V1, p. 1.

¹⁵Earl C. Gottschalk, Jr., "Film Flap: Theater Chains Stop Up Their Protests Against 'Blind-Bidding' Practices of Big Moviemakers," *Wall Street Journal*, August 9, 1979, J 194: p. 1.

¹⁶Charles F. Rouse III, "Will Faltering Economy Curtail Theater Growth?" *Box Office*, May 5, 1980, pp. 11, 12, 20, 26.

¹⁷John F. Berry, "Competitors Flash Guns at Cable TV Conclave," *Box Office*, May 5, 1980, p. 4.

¹⁸"HBO Views Pre-Buys, Original Productions As Current Solution to Program Scarcity," *TVC*, March 1, 1980, p. 28.

¹⁹"Movies Fill Need for Spectacular Entertainment," *USA Today*, October, 1978, p. 15.

²⁰"Disney Shakes Up Management Structure," *Box Office*, June 9, 1980, p. 1, 2.

²¹Jim Robbins, "Wall Street Optimistic on Disney Shift," *Box Office*, June 16, 1980, p. 4.

²²Jimmy Summers, "MGM Divides Film, Hotel Blocs," *Box Office*, June 9, 1980, p. 11.

²³Mel Gilden, "Sci-Fi Fan Clubs Keep Fanatics Happy — and Everybody Wins," *Box Office*, May 19, 1980, pp. 1, 4.

²⁴"Paramount Pictures: Applying a TV Formula for Success," *Business Week*, November 27, 1978.

²⁵"Hirschfield Declares 'Unlikely Theatrical Revenues Will Grow,'" *The Hollywood Reporter*, October 1, 1980, p. 1, 3.

²⁶"Hirschfield: Pic Industry Needs Share of Home Vid," *Daily Variety*, October 1, 1980, pp. 10, 11.

²⁷The authors wish to thank American Cable Company, Walt Disney Productions, Paul Kagan Associates, Metro-Goldwyn—Mayer Film Company, and Twentieth Century-Fox Pictures for their input and assistance.

Issues in Public Utility Regulation

DENNIS T. OFFICER

One of the most complex economic and political issues confronting consumers, investors, and regulatory agencies is how to balance the interests of consumers and investors in regulating public utilities. The main issue is that regulatory agencies must allow a rate of return on the utility's investment that produces enough revenue to ensure the financial integrity of the utility; at the same time the agencies must set prices on the utility's product or service that do not result in a monopoly profit paid for by the consumer.

Thus, if a regulatory body allows too low a rate of return, consumers pay less for the utility service at the expense of utility investors who may abandon the utility for other more attractive investments. Conversely, a rate of return that is too high will mean utility investors are earning monopoly profits at the expense of the rate-paying public.

The purposes of this article are first, to examine the legal and economic justification for the regulatory process as it applies to electric, gas and telephone utilities;

Public utilities must be allowed to charge a rate that will assure the stockholder a fair and reasonable rate of return, but will not penalize the consumer. This article discusses the problems involved for the regulating agency in determining that rate.

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second, to demonstrate an example of utility regulation and some of the areas of conflict in regulation; and, finally, to show how modern financial theory used in conjunction with diligent and thoughtful regulation is in the best interests of consumers and investors.

LEGAL AND ECONOMIC JUSTIFICATION FOR UTILITY RATE REGULATION

Utility regulation occurs at several levels of government. At the federal level, the two principal regulatory agencies are the Federal Energy Regulating Commission (FERC) and the Federal Communications Commission (FCC). Both are responsible for regulating public utilities engaged in interstate commerce. Furthermore, each state has some form of a public utilities commission. In Arizona, the Arizona Corporation Commission, through the Utilities Division, serves as the major state regulatory agency.

The legal authority and justification for regulating the rates of return utilities may earn on their investment emanate primarily from two U.S. Supreme Court decisions: *Bluefield Water Works and Investment Company v. Public Service Commission of the State of West Virginia* (262 U.S. 679, 1923) and *Federal Power Commission v. Hope Natural Gas Company* (320 U.S. 591, 1944). The cases are hereafter referred to as the *Bluefield* and *Hope* cases.

Both decisions attempted to clarify the legal standard for determining "fair and reasonable" rates of

return a utility was allowed to earn. A just and reasonable return was defined in *Bluefield* as:

... a return on the value of property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties.¹

Bluefield clearly set the standard of comparison in rate of return regulation as that rate of return earned by "other business undertakings."

The *Hope* case went further to recognize the need for a utility's revenue to cover "capital costs" in addition to operating costs. Specifically the Court said:

From the investor or company point of view it is important that there be enough revenue not only for operating expenses, but also for the capital costs of the business. . . . the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.²

Hope suggested that the equity owner (common stockholder) should be allowed to earn a rate of return equal to that earned by other stockholders of firms with similar risk. It is from the *Hope* case that the "comparable earnings" standard as a comparative measure was developed. An important note of the *Hope* case was that the return must be large enough to "attract capital," whereby utilities should earn a return that does not impair the firm's ability to raise funds to meet the needs of the customers.

In summary, the *Bluefield* and *Hope* cases defined that a "just and reasonable" rate of return a utility should earn must be equal to those returns being earned by other firms with similar risk. Unfortunately, neither decision specifically stated how to measure "similar returns" of firms with "corresponding risks."

AN EXAMPLE OF THE RATE-MAKING PROCESS

To more fully explain the difficulties regulatory agencies have in resolving rate debates, this section illustrates a hypothetical utility rate of return decision and the methods of determining rates of return.

A regulatory agency's major responsibility in utility rate cases is to determine the total revenue a utility

should generate for a given period of time in order to set a price on the utility service. The process consists of three major components: first, determine the allowed return to capital; second, estimate other costs such as depreciation and operating expenses to determine total revenue requirements; and, third, estimate the total units of service sold during a given period of time in order to place a per unit price on the service.

Figure 1 is a simplified overview of a typical rate-making process. Panel A shows that a regulatory agency must determine a "just and reasonable" return to each source of capital in order to determine the total return to capital. Panel B illustrates the process of determining total revenue requirements for a utility in a given period. Note that total revenue requirements include a return to the equity holders, preferred stockholders and the bondholders. The third part, Panel C, presents the process of pricing the utility service. Assuming utility services can be reasonably forecasted (for example, electric power consumption is mainly a function of population trends and past weather conditions), the price per unit of service can be calculated by dividing the total revenue requirements by the total expected units of service.

To fully appreciate the mechanics of rate regulation, consider a hypothetical electric utility, XYZ Electric Power Co. Assume XYZ Power has a rate base of \$100 million that is, the net value of assets committed to public use, and a capital structure consisting of \$60 million of long-term debt, \$10 million of preferred stock and \$30 million of common equity (see Table 1). Note that long-term debt constitutes 60 percent of the rate base, preferred stock 10 percent, and common equity 30 percent.

Table 1

XYZ POWER COMPANY

		Long-Term Debt	\$ 60,000,000
		Preferred Stock	\$ 10,000,000
		Common Equity	\$ 30,000,000
Assets	\$100,000,000		
Rate Base	\$100,000,000		\$100,000,000

$$\% \text{ Long-Term Debt} = \$60,000,000 / \$100,000,000 = 60\%$$

$$\% \text{ Preferred Stock} = \$10,000,000 / \$100,000,000 = 10\%$$

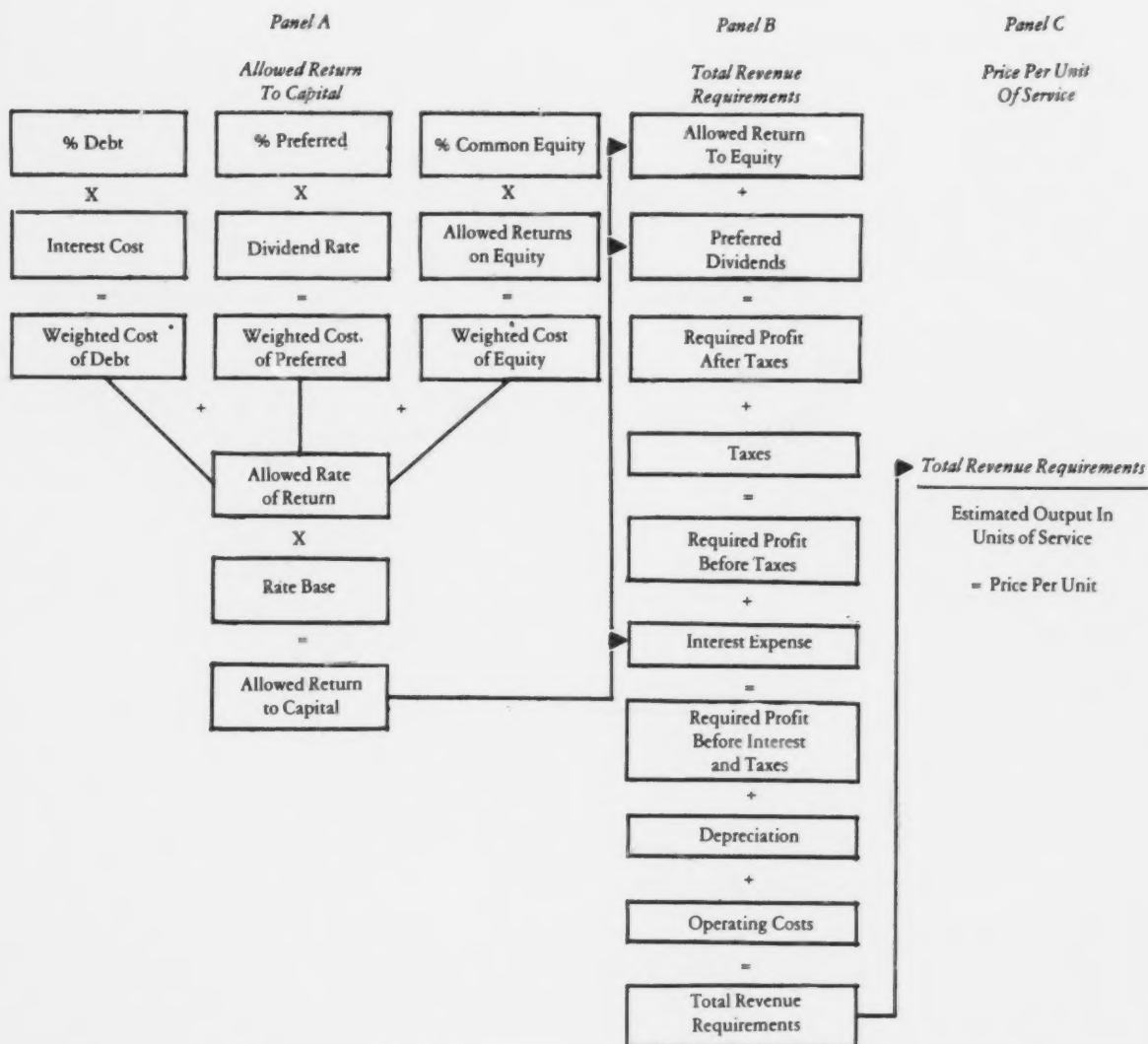
$$\% \text{ Common Equity} = \$30,000,000 / \$100,000,000 = 30\%$$

Source: Developed by the author.

Assume XYZ Power applies for a rate hearing to determine future rates for the electric service. The regu-

FIGURE I

OVERVIEW OF RATE-MAKING PROCESS



Source: Developed by the author.

latory agency, after some deliberation, resolves that a "fair and reasonable" return on equity should be 15 percent. That implies that enough after-tax revenue must be generated in order for the stockholders to earn a 15 percent rate of return on their investment. Additionally, the actual interest cost on the long-term debt is 8 percent and the preferred stock carries a 7 percent dividend rate. Figure II illustrates the determination of the allowed return to capital. The regulatory agency should multiply the allowed return on each source of capital by the appropriate proportions of each source contributing to the rate base. Given that each source of capital does not contribute the same proportions, a weighted average allowed return of 10 percent is obtained. Multiplying the allowed return of 10 percent by the approved "rate base" yields an allowed return to capital sources of \$10 million.

FIGURE II

ALLOWED RETURN TO CAPITAL XYZ POWER CO.

% Debt 60%	% Preferred 10%	% Common Equity 30%
X	X	X
Interest Rate 8%	Dividend Rate 7%	Allowed Return On Equity 15%
=	=	=
4.8%	.7%	4.5%
+		
Allowed Rate Of Return 10%		
X		
Rate Base \$100,000,000		
=		
Allowed Return To Capital \$10,000,000		

Source: Developed by the author.

Figure II presents the calculation of the total revenue requirements to be generated using the values of Table 1. Assuming income taxes are 50 percent of income, depreciation on the rate base is \$2,800,000 and

total operating costs are \$52,000,000, total revenue requirements in Figure III would be \$70,000,000.

A number of points are notable from Figure III. First, income taxes are based on profits after interest expense but before preferred and common dividends. The regulatory agency must allow only \$1 of revenue to cover \$1 of interest expense, but must allow approximately \$2 of revenue in order to provide \$1 of revenue

FIGURE III

TOTAL REVENUE REQUIREMENTS XYZ POWER CO.

Allowed Return To Equity	$\$30,000,000 \times .15 =$	<u>\$ 4,500,000</u>
+		
Preferred Dividends	$\$10,000,000 \times .07 =$	<u>\$ 700,000</u>
=		
Required Profit After Taxes		<u>\$ 5,200,000</u>
+		
Taxes (50%)		<u>\$ 5,200,000</u>
=		
Required Profit Before Taxes		\$10,400,000
+		
Interest Expense	$\$60,000,000 \times .08 =$	<u>\$ 4,800,000</u>
=		
Required Profit Before Interest & Taxes		<u>\$15,200,000</u>
+		
Depreciation (Assumed)		\$ 2,800,000
+		
Operating Costs (Assumed)		<u>\$55,000,000</u>
=		
Total Revenue Requirements		<u>\$70,000,000</u>

Source: Developed by the author.

to the preferred and common stockholders (assuming a 50 percent tax rate). In Figure III, to provide \$5,200,000 of revenue (\$4,500,000 + \$700,000) to the common and preferred stockholders, the regulatory agency must allow profits of \$10,400,000 before taxes. Second, the total cost of providing a return to the suppliers of capital and taxes is profit before interest and taxes or \$15,200,000. From the view of the consumer, the percentage cost to provide a return to capital and taxes is $\$15,200,000 / \$100,000,000$ or 15.2 percent.

Assuming the total revenue requirements of \$70,000,000 are reasonable, the last step in this simplified example is to set a price per unit of the service XYZ Power provides its customers. For example, if XYZ Power forecasts that 875 million kilowatt hours will be produced during the coming year, the average price per kilowatt hour should be set as follows:

$$\frac{\text{Total Revenue Requirements}}{\text{Number of Kilowatt Hours Forecasted}} = \frac{\$70,000,000}{875,000} = \$.08$$

The consumer would pay, on the average, \$.08 per kilowatt hour as long as the rates remain in force. Yet, because of the complexity of the rate regulation process, many other factors must be considered. Practically all of the items in Figure I are subject to controversy and conflicting views. The following is a brief compendium of the major points of contention in regulatory proceedings.

Rate Base

Two principal issues arise in the calculation of the rate base. First, what items should be included or excluded from the base? Increasing the size of the rate base increases the required return to capital, thus increasing the rates consumers pay for utility service. For example, should a partially-completed power plant be included in the rate base although it has not produced any service for the consumer at the present time?

Second and most controversial, what is the dollar value of the rate base? Does a regulatory agency use the net historical cost (original cost less depreciation) of the rate base or rather the current or replacement cost of the assets? Clearly, inflation has caused the replacement cost of certain assets to far exceed their historical cost.³ This is particularly true for capital intensive industries such as utilities due to the relatively long lives of major capital equipment (i.e., power plants, distribution facilities). In Arizona, utility rate bases are determined on a fair value basis because the Arizona Constitution re-

quires a fair value computation. Specifically, the Constitution requires that the Corporation Commission:

Ascertain the fair value of property within the state of every public service corporation therein . . . (for) the determination of the value of the property within the state as such public service corporation.⁴

Unfortunately, the Constitution does not specify precisely how fair value should be ascertained. The Corporation Commission has evolved a policy of giving weight to both historical and reproduction cost estimates in determining fair value.⁵

Operating Costs

Most utility operating costs are determined by the market (fuel, wages, salaries) or by various governments (licenses, taxes). In some regulatory proceedings, discretionary expenses such as advertising, research, or perquisites to key executives are challenged by the regulatory agency in addition to the overall operating cost structure being reviewed for reasonableness.

Interest on Long-Term Debt

Regulatory agencies traditionally allow the utility sufficient revenues to cover the historical or "embedded" interest costs on long-term debt to avoid financial insolvency of the utility. However, current interest rates have risen significantly in recent years. If a utility finances a construction project, it clearly borrows at current interest rates, not at historical or embedded rates. Should regulatory agencies allow revenues to cover only past interest costs or anticipate higher future interest rates? If the former position is adopted, the increased borrowing costs reduce the income available to the common stockholders. Utilities then are sometimes forced to seek rate relief to increase allowed revenues to cover higher interest costs.

Rate Schedules

The price of \$.08 per kilowatt for XYZ Power was a simplified example assuming only one type of utility user. In reality, there are residential, commercial, industrial, irrigation, and other classes of utility users, each possibly having a separate rate schedule. Regulators, given the total revenue requirements, must determine the individual rates per unit of service each user group is charged to generate the total revenue requirement. In recent years, a number of rate structure inno-

variations have been proposed by various user groups. For example, time-of-day pricing of electric service has been suggested to enable utilities to spread peak power demand over more hours in a given day.⁶ Basically, time-of-day pricing puts higher prices per kilowatt hour consumed during peak demand daylight hours and lower prices on off-peak periods such as late evening and early morning. This innovation, however, places burdens on some user groups unable to reallocate usage to off-peak hours.

Equality of Risk

The *Hope* case directed regulatory agencies to allow the common stockholders a rate of return "commensurate with returns on investments having corresponding risks." How does a regulatory agency measure equal risk? Should other regulated utilities be used as a benchmark for equal risk or all other firms in the market? The common approach in regulatory proceedings is to employ similar regulated utilities as the risk comparison on the reasoning that other utilities confront the same investment uncertainties. This approach induces a degree of circular reasoning by regulators. The principal investment risk to a stockholder investing in a utility common stock depends on the regulatory decision. An unfavorable decision from the view of the stockholder will have a tendency to reduce the stock price in the market. To compare the returns of regulated utilities, who are likewise being compared to other regulated utilities, will result in rates of return for all utilities to be the same in the long run.⁷ Clearly, this circular reasoning removes the true nature of owning common stock, that is, being the residual owner in the income of the firm while taking the risk of the income of the firm fluctuating over time. A more reasonable approach to investment risk comparisons would be to utilize all similar risk firms, regulated and nonregulated, in analyzing equal investment risk.

FINANCIAL THEORY IN UTILITY REGULATION

The rate of return allowed to the common stockholders usually occupies a prominent place in utility rate cases. How does a regulatory agency measure a "fair and reasonable" rate of return that the utility common stockholders are allowed to earn? In many regulatory jurisdictions, two approaches are commonly used to measure "fair and reasonable" rates of return to the common stockholders.

The first approach is known as the "comparable earnings" standard where the regulatory agency computes the rates of return earned on the book value of the equity in regulated and nonregulated industries. The utility is then allowed a rate of return on the book value of its equity based on the rates other firms earn.⁸ However, there are two distinct problems with the "comparable earnings" approach: 1) there is no specific and unambiguous method of determining equality of risk, and 2) accounting methods between regulated and nonregulated firms render comparisons of rate of return on book value almost meaningless.

The second approach for determining rates of return to equity capital is known as the discounted cash flow (DCF) method.⁹ It is based on the assumption that investors in common stock place a value on common stocks by discounting the expected cash flows from the equity security. In other words, the market value of a share of common stock is equal to the expected dividends and the eventual liquidation value of the stock discounted at the rate investors require in the market. If investors actually earn the required rate of return, the stock price should remain unchanged. If the investors earn a rate less than the required rate in the market, the stock price should fall. Conversely, if the investors earn a rate more than the required rate, the stock should increase in price. This is the very essence of rate of return regulation: the regulatory agency should allow a rate of return on the market value of the equity that is exactly equal to the rate required in the market. A descriptive model used in DCF analysis states that the required rate of return, R , is equal to the expected yearly dividend, D , divided by the stock price, P , plus the growth rate in dividends, g , over time. Formally, the DCF model is stated as:

$$R = \frac{D}{P} + g$$

For example, assume XYZ Power expects the stock dividend to be \$2.00 in the coming year, the current stock price is \$20.00 and the dividend is expected to grow at an annual rate of 5 percent per year. The estimated required rate of return, R , would be:

$$R = \frac{\$2.00}{\$20.00} + 5\% = 10\% + 5\% = 15\%$$

If that rate is applied to the *market* value of XYZ Power's common stock, investors should earn exactly 15 percent on their investment. What is important in this

approach is that investors are earning a rate of return based on the *market* value of their investment.

Regulatory agencies should examine how their decisions affect the market value of the common stock rather than the book value because investors are concerned with the actual rate of return earned on the stock in the market. Rate of return on the book value of the common equity is found by dividing net income earned during the year by the book value of the common equity. While the rates of return on book value may remain relatively constant during a given period, the rates of return earned by the investor in the market may vary over a wide range. Setting stable rates of return on book value does not necessarily lead to a stable rate of return in the market.

An important fact in utility regulation is that regulation is designed to be a substitute for competition where natural monopolies, such as utilities, are licensed to operate. To set stable rates of return on the book value of the equity is contrary to the true nature of a risky equity security. Utilities should be rewarded in terms of higher stock prices when management is efficient in managing resources. When rates of return on equity securities of nonregulated firms are rising, regulators should allow utility common stocks a similar higher rate of return. Failure to adjust rates would unduly penalize utility investors. Conversely, regulators should allow rates of return on utility common stocks to decline in falling equity markets to ensure that consumers of utility services are not charged rates higher

than are necessary.

Vigorous and active utility regulation operates in the best interests of both consumers and investors. Fair and reasonable allowed rates of return enable utilities to attract resources, both human and financial, that are necessary for the continued delivery of utility services. Consumers are benefited by the fact that utility rates are based on rigorous scrutiny of costs. The only means of maintaining a viable energy supply is through the administration of a fair and reasonable price.

CONCLUSION

Utility regulation is a process of balancing the competing interests of consumers and investors in a non-competitive environment. Utilities are natural monopolies designed to provide services to customers at a price consistent with the costs and risks inherent in producing the service. This article presents an overview of the process of determining the rates of return utilities should be allowed to earn and the price necessary to generate those returns. If investor-owned public utilities are a desirable objective of society, diligent and thoughtful regulation must be present to ensure that the financial integrity of utilities is maintained while providing consumers low-cost utility services. To pursue any other course implies that one group in society will benefit at the expense of another group and is conducive to the ultimate demise of privately-owned public utilities.

¹*Bluefield Water Works and Investment Company v. Public Service Commission of the State of West Virginia*, 262 U. S. 679 (1923).

²*Federal Power Commission v. Hope Natural Gas Company*, 320 U. S. 591 (1944).

³S. Kumar, "How Fair is Fair Valuation of Rates Bases?," *Public Utilities Fortnightly*, Vol. 104, 2 (July 19, 1979), pp. 27-29.

⁴Article XV P. VIV, *Arizona Constitution*.

⁵For a complete discussion of this issue, see Robert L. Knox, "Public Utility Regulation in Arizona," *Arizona Business*, Vol. XVII

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⁶Richard Pierce, "Time-of-Day Rates: A Statement," *Public Utilities Fortnightly*, Vol. 103, 12 (June 7, 1979), pp. 19-22.

⁷Alexander Robichek, "Regulation and Modern Finance Theory," *Journal of Finance*, Vol. XXXIII 3 (June, 1978), pp. 693-705.

⁸*Ibid*, p. 701.

⁹J. Fred Weston and E. F. Brigham, *Managerial Finance* (Hinsdale, Illinois: Dryden Press, 1978), p. 700.

The Arizona Business Scene



Inflation and Interest Rates



Interest rates (such as the Treasury bill rate, prime rate, and mortgage rate) increased rapidly in the fall of 1980, surpassing the levels reached in the early spring of 1980. As the rates reached levels never seen before, many people questioned whether the rates were unreasonably high. One approach to answering this question deals with analyzing the relationship between inflation and interest rates over a period of time. Interest rates are directly related to the rate of inflation. As inflation increases so do interest rates. In the late 1960s when inflation was 3 to 4 percent, the prime rate was 5 to 6 percent. Now inflation is much higher, and so are interest rates. An examination of the history of inflation and interest rates is in order before looking at their current relationship.

The Treasury bill (T-bill) rate is a representative example of a short-term *interest* rate. With the money market certificate offered by banks and savings and loan associations tied to the six-month Treasury bill rate, this rate has become more relevant to the general public since 1978. Treasury bill rates help set the level of lending rates since T-bills represent a cost to the lender to obtain the funds which it will then lend. Before the large increase in the inflation rate in the early 1970s, the T-bill rate averaged about 1 percentage point higher than the inflation rate. A T-bill rate higher than the inflation rate provides the saver with a positive "real" (inflation-adjusted) return, as would be expected to entice savings. Since 1973, however, Treasury bill rates have not kept pace with the inflation rate,

averaging 1 to 1.5 percentage points below the rate of inflation. Thus, savers since 1973 have generally been receiving a negative real return in the absence of tax considerations, certainly not an incentive to save.

The prime rate, in turn, is a representative example of a short-term *lending* rate. The prime interest rate is set depending upon several factors, including the inflation rate and short-term interest rates, such as the T-Bill rate and the Federal Reserve discount rate. Prior to the period of more rapid inflation, the prime rate was generally set about 1 percentage point higher than the T-bill rate, and about 2 percentage points above the rate of inflation. A prime rate higher than both the inflation rate and the lenders' cost of money (short-term interest rates) provides lenders with a positive real return, required for lenders to make a profit. Since 1973, however, the prime rate has averaged only about one-half percentage point above the rate of inflation. This decrease in spread has been partially offset by a somewhat greater spread between the prime rate and the short-term cost of money. Thus, lenders are receiving a smaller real return than they were previously on short-term loans, despite charging a much higher rate to borrowers.

The same situation is true for long-term lending rates, such as the mortgage rate. Before 1973, the conventional mortgage rate was generally a little more than 2 percentage points above the short-term cost of money, and a little more than 3 percentage points above the inflation rate. This again provides a positive

real return on the investment for the lender. Since 1973, the mortgage rate has maintained its spread over the short-term rates, but the spread over the inflation rate is down to only 1 percentage point. Thus, lenders are receiving a smaller real return on new mortgages than previously.

In general, from 1973 to 1979 neither short-term interest rates received by savers, nor lending rates (both short and long) have kept pace with inflation. Thus, even though both savings and lending interest rates rose to historically high levels, both savers and lenders are being hurt by inflation. It is the borrower that has benefited from high inflation. Even though the interest rates charged to borrow money have been historically high, these rates are a relative bargain compared to inflation. These conditions help to explain why Americans (including Arizonans) have been saving less and borrowing more in recent years. Tax considerations make borrowing even more attractive.

Given this history, how do 1980 interest rates stack up? Twice in 1980 interest rates reached levels far above those previously reached — in April and again in December. At their peak in April, Treasury bill and other short-term rates as compared to inflation were above the level that was common in the period from 1973 to 1979, but not above the level that was common previous to 1973. These levels are explained earlier in this article. In late spring, 1980 rates plummeted to far below the rate of inflation. The increase in rates in the fall was therefore inevitable, though the level reached by December was higher than the historical spread from the inflation rate. This large spread was due to both higher interest rates than in April and to a decrease in the rate of inflation since the spring of 1980. Thus, until December, T-bill and other short-term rates were not disproportionately high compared to inflation. The

average T-bill rate for 1980 was actually approximately 2 percentage points below the average inflation rate.

The prime rate and other short-term lending rates have behaved similarly to the short-term cost of money rates. The peak rates reached in April and December produced a historically large spread between both short-term interest rates and the inflation rate. The rates in effect in the summer, however, were considerably below the inflation rate. A comparison of the prime rate to other rates is shown in Table 1. Using only the narrow view of historical relationships between interest rates and inflation, the prime rate has been disproportionately high in both of the peak periods, although the yearly average was approximately equal to the historic spread between the inflation rate and the prime rate.

Other factors influence the level of lending rates, however, besides the inflation rate and short-term interest rates. An unprecedented large demand for loans, combined with an unprecedented low savings rate (a major source of loanable funds) has created an imbalance between the supply and demand of loanable funds. This imbalance has to be adjusted by the lending rate. In addition, the interest rate on savings accounts of over \$100,000, another source of loanable funds, was as high as 21 percent in 1980. Thus, while the prime rate has had a historically large spread compared to most short-term interest rates and the rate of inflation, a prime rate as high as 20 percent or more is justified given the low supply of savings, the heavy demand for loans, and the cost of some funds. During peak interest rate periods in 1980, however, borrowers secured loans at rates much higher than the rate of inflation. This heavy demand for loans at high interest rates has forced the interest rates even higher. Thus, the willingness of borrowers to accept high rates is at least partially responsible for the very high interest rates dur-

TABLE 1

THE PRIME RATE COMPARED TO INFLATION AND OTHER INTEREST RATES

	1965-1972	1973-1979	December 1979	March 1980	June 1980	September 1980	December 1980
Prime rate, percent	5.9	8.9	15.3	18.3	12.6	12.2	19.8
Difference between prime rate and inflation* (in percentage points)	2.1	.6	2.6	4.4	(.9)	.1	6.3
Discount rate	1.1	1.8	3.3	5.3	.6	2.2	7.0
Treasury bill rate	.9	1.75	3.2	2.8	5.6	1.9	4.4

*Measured by The Consumer Price Index.

Source: *Federal Reserve Bulletin*, Board of Governors of the Federal Reserve System, various issues; and *The Wall Street Journal*, various issues.

ing parts of 1980. At these times, borrowers are no longer benefiting from inflation.

The situation with long-term mortgage loans is somewhat different. Even at peak levels of about 16 percent, the mortgage lending rate has not been too high given its historical relationship to inflation and the cost of money. During the summer, mortgage rates, like all other rates, dropped to a relatively low level compared to inflation. Borrowers were then able to obtain a mortgage at about the same rate as inflation. Mortgage rates did not reach as high a peak as the prime rate in 1980 despite heavy demand, possibly because many applicants could not qualify for a mortgage loan at the higher rates, effectively reducing the demand for these loans.

Interest rates have fluctuated widely during 1980. Compared to inflation, interest rates have been both

high and low for brief periods during the year, but have averaged near the levels common in recent years. At times, short-term lending rates have been high compared to their historical relationship with inflation, due to the relatively short supply of loanable funds and the willingness of borrowers to borrow short-term money at very high rates. During the periods of peak rates this has removed the benefits from inflation that borrowers have received in recent years. Otherwise, both savers and lenders have continued to suffer from inflation while borrowers have benefited. Interest rates in Arizona have been comparable to the national average over the past several years. The inflation rate in Arizona over the long term has also been comparable to the national average, though in the last three years the rate in Arizona has been higher. This means that high interest rates are even more justifiable in Arizona than in much of the rest of the nation.

ARIZONA SALES OF ELECTRICAL POWER
By Months in Millions of KWH*

Current Month:	Actual:		Percent Change Current Month From	
	1980 (Year)	1979 (Year)	Same Month/ Prev. Year	Previous Month
November	2092.4	2047.8	2.2	-8.6

* Based on reports from major suppliers.

A Survey of Arizona Business Conditions

HAROLD FEARON

Following four months of lackluster growth, economic activity dipped slightly in December, according to results from the monthly business survey of the Purchasing Management Association of Arizona. The upswing which began in August after the very short recession over the summer months never really gained momentum, and now it appears to have run out of steam entirely. Inventory levels of purchased materials, new orders received from customers, and production all fell in December. Employment showed no change, while prices continued to increase. The inability of the economy to hold its slight gains, due largely to the very high interest levels and expectations of continued high interest and inflation rates, has dampened the near-term outlook and makes the possibility of a double-dip recession appear quite likely. Nevertheless, the lean inventory position Arizona firms are maintaining, plus plans to increase plant and equipment investment in 1981, are encouraging signs and should cushion the effects of a second downswing, making it of short duration.

The purchasing business survey is now in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the

state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Prices paid for major purchased items went up again in December, but at a slightly smaller rate than recorded in the previous two months. Fifty-seven percent of the purchasing managers reported paying higher prices in December than in November; 39 percent saw prices unchanged; and only 4 percent said prices declined. While the inflation rate did moderate slightly in the third quarter of the year as the recession hit bottom, this reduction in inflationary pressure was short lived and has made it difficult for the recovery to gain momentum. The very high interest rates should begin to slow down the inflationary trend, but it will take several months for this medicine to become really effective, and the side effects likely will be a further period of level or negative economic activity.

Delivery time on shipments from vendors continued to stretch out, and at a rate only slightly higher than in the previous few months. Longer delivery times were reported by 29 percent of the firms; 10 percent said they received faster service from their suppliers. While delivery times have been positive for the past five months, the increases have been marginal and far under those

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experienced during a normal economic upswing, indicating that the recovery really never developed a strong base from which to move.

Inventory levels of purchased materials registered a slight decrease, following November's net increase. Inventory additions were reported by 27 percent of the firms, which was countered by a slightly larger 29 percent reporting a reduction in stocks. As the Arizona economy continues to follow a level or negative trend, firms likely will hold a tight rein on stocks, which at the current interest rates have become increasingly expensive to maintain. Yet there do not appear to be any major inventory excesses, so the possibility that inventory liquidations will cause a snowball effect during the downswing appears remote.

New orders received from customers declined in December, following four consecutive months of moderate increases. Twenty-five percent of the firms booked more new business in December than in November, but a larger 33 percent saw a shrinkage in their order books. Evidently, the slowdown in business activity is widespread, and customers are being cautious in their decisions to place new orders.

Production also dropped, mirroring closely the declining new order trend. This drop follows four consecutive monthly production increases. Higher production was reported by 26 percent of the firms, compared to the larger 35 percent who cut output. Further reductions will occur until the new order rate turns positive again.

Employment showed no change in December, following the previous three months of moderate increases. The 15 percent who added employees was balanced out by the same percentage who pared payrolls. If further new order decreases occur over the first quarter of 1981, employment cuts will materialize.

The special question, asked each December, covering *anticipated* expenditures for new plant and equipment during 1981 indicates that the step-up in investment which occurred during 1980 will continue into the new year. This marks the sixth straight year of an upward trend in expectations, which began in December of 1975, although the strength of the increase is smaller than in each of the past four years. Nevertheless, even if the investment growth does moderate somewhat, it still should provide a source of economic stimulus in the year to come.

When asked to compare capital expenditures *anticipated* for 1981 with those actually made in 1980, 49 percent said their firm would spend more; 27 percent

expect no change; and 24 percent forecast a decline. The results from this special question over the past seven years are shown in Table 1.

TABLE 1

ANTICIPATED CAPITAL EXPENDITURES

<i>Expenditures anticipated for new plant and equipment</i>	<i>Percentage of Firms</i>		
	<i>Higher</i>	<i>Same</i>	<i>Lower</i>
1981 compared to 1980	49	27	24
1980 compared to 1979	54	29	17
1979 compared to 1978	55	28	17
1978 compared to 1977	54	30	16
1977 compared to 1976	48	37	15
1976 compared to 1975	41	28	31
1975 compared to 1974	21	31	48

Source: Survey of the Purchasing Management Association of Arizona.

On balance, 1980 has been a year of adjustment for the Arizona economy. The long and predicted recession finally did arrive, following an expansion of record length. The recession of the summer was very short and shallow in magnitude; however, the upswing never gained any real momentum and now has been cut short. Until interest rates and prices moderate, it is unlikely that any major growth trend will resume. However, the anticipated capital expenditures in 1981 will be a major positive stimulus to a resumption of growth after the readjustment finally works itself out.

The results of the December survey are shown in Table 2.

TABLE 2

DECEMBER PURCHASING SURVEY

<i>Key Indicators</i>	<i>Percent of Purchasing Managers Indicating Each Response (December compared to November)</i>		
	<i>Higher</i>	<i>Same</i>	<i>Lower</i>
Prices paid for major commodities	57	39	4
Delivery time from vendors	29	61	10
Purchased materials inventory level	27	44	29
New orders received	25	42	33
Production	26	39	35
Employment	15	70	15

Source: Survey of the Purchasing Management Association of Arizona.

Arizona Building Permits: Monthly Report

NOVEMBER, 1980

	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE COUNTY.....	8	158,150	3	96,000	—	—	1	6,000	12	260,150
Eagar.....	3	128,500	1	50,000	—	—	—	—	4	178,500
St. Johns.....	2	N/C	—	—	—	—	—	—	2	N/C
Springerville.....	—	—	—	—	—	—	—	—	—	—
Unincorporated Apache County.....	3	29,650	2	46,000	—	—	1	6,000	6	81,650
COCHISE COUNTY.....	90	1,588,016	3	185,000	—	—	61	169,563	154	1,942,579
Benson.....	2	9,000	—	—	—	—	3	27,300	5	36,300
Bisbee.....	9	22,000	—	—	—	—	1	4,000	10	26,000
Douglas.....	10	261,513	—	—	—	—	10	38,788	20	300,301
Huachuca City.....	6	3,895	—	—	—	—	—	—	6	3,895
Sierra Vista.....	25	405,432	2	130,000	—	—	32	51,075	59	586,507
Tombstone.....	4	46,500	1	55,000	—	—	—	—	5	101,500
Unincorporated Cochise County.....	32	838,476	—	—	—	—	13	44,900	45	883,376
Willcox.....	2	1,200	—	—	—	—	2	3,500	4	4,700
COCONINO COUNTY.....	96	2,430,620	9	494,678	—	—	39	47,331	144	2,972,629
Flagstaff.....	19	1,021,994	6	288,110	—	—	21	27,731	46	1,337,835
Fredonia.....	—	—	1	500	—	—	—	—	1	500
Page.....	10	179,720	—	—	—	—	3	N/C	13	179,720
Unincorporated Coconino County.....	62	1,170,129	2	206,068	—	—	5	N/C	69	1,376,197
Williams.....	5	58,777	—	—	—	—	10	19,600	15	78,377
GILA COUNTY.....	52	885,279	4	692,978	—	—	12	13,810	68	1,592,067
Globe.....	7	87,000	—	—	—	—	3	650	10	87,650
Hayden.....	1	2,000	—	—	—	—	—	—	1	2,000
Miami.....	4	6,000	—	—	—	—	—	—	4	6,000
Payson.....	16	168,079	3	667,978	—	—	9	13,160	28	849,217
Unincorporated Gila County.....	24	622,200	1	25,000	—	—	—	—	25	647,200
GRAHAM COUNTY.....	38	646,510	4	233,300	—	—	1	500	43	880,310
Pima.....	—	—	—	—	—	—	—	—	—	—
Safford.....	9	151,400	3	81,300	—	—	1	500	13	233,200
Thatcher.....	12	242,500	—	—	—	—	—	—	12	242,500
Unincorporated Graham County.....	17	252,610	1	152,000	—	—	—	—	18	404,610
GREENLEE COUNTY.....	—	—	—	—	—	—	—	—	—	—
Clifton.....	—	—	—	—	—	—	—	—	—	—
Duncan.....	—	—	—	—	—	—	—	—	—	—
Unincorporated Greenlee County.....	—	—	—	—	—	—	—	—	—	—
MARICOPA COUNTY.....	1,859	46,042,530	150	53,369,011	40	12,038,842	1,239	11,225,101	3,288	122,675,484
Avondale.....	7	78,970	—	—	2	59,000	13	24,820	22	162,790
Buckeye.....	5	72,500	1	20,000	—	—	3	11,419	9	103,919
Chandler.....	66	1,435,023	3	170,648	2	1,185,000	74	370,588	145	3,161,259
El Mirage.....	3	48,000	1	150,000	—	—	—	—	4	198,000
Gila Bend.....	1	1,500	—	—	—	—	1	2,200	2	3,700
Gilbert.....	4	251,980	—	—	—	—	16	32,816	20	284,796
Glendale.....	321	8,227,460	10	4,125,200	2	3,153,000	172	715,827	505	16,221,487
Goodyear.....	—	—	—	—	—	—	7	4,100	7	4,100
Guadalupe.....	2	8,000	—	—	—	—	2	2,880	4	10,880
Mesa.....	121	3,814,921	12	7,642,391	2	257,000	215	2,652,264	350	14,366,576
Paradise Valley.....	25	1,432,815	—	—	—	—	23	123,098	48	1,555,913
Peoria.....	15	272,630	3	220,552	1	168,000	21	72,981	40	734,163
Phoenix.....	606	16,244,950	35	24,264,354	16	4,627,542	392	3,927,304	1,049	49,064,150
Scottsdale.....	93	4,025,022	48	13,934,370	—	—	144	754,014	285	18,713,406
Surprise.....	5	36,900	—	—	—	—	7	1,803,862	12	1,840,762
Tempe.....	90	1,898,700	18	1,030,800	15	2,589,300	21	330,700	144	5,849,500
Tolleson.....	4	17,800	—	—	—	—	—	—	4	17,800
Unincorporated Maricopa County.....	461	7,965,077	18	1,774,696	—	—	122	394,178	601	10,133,951
Wickenburg.....	2	27,500	1	36,000	—	—	—	—	3	63,500
Youngtown.....	28	182,782	—	—	—	—	6	2,050	34	184,832

Arizona Building Permits: Monthly Report (Continued)

NOVEMBER, 1980	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE COUNTY	273	4,066,405	18	1,920,248	—	—	200	313,930	491	6,300,583
Kingman City	19	412,431	4	129,842	—	—	1	450	24	542,723
Kingman Area	36	401,976	4	350,140	—	—	35	38,762	75	790,878
Lake Havasu City	57	1,629,843	7	769,730	—	—	19	84,299	83	2,483,872
Lake Havasu Area	3	13,440	—	—	—	—	7	7,560	10	21,000
Mohave Valley North	90	920,529	2	662,736	—	—	81	93,812	173	1,677,077
Mohave Valley South	56	569,417	—	—	—	—	36	39,736	92	609,153
Dolan Springs	3	55,332	—	—	—	—	5	42,088	8	97,420
Sacramento Valley	8	61,997	—	—	—	—	15	6,053	23	68,050
Mohave County General	1	1,440	1	7,800	—	—	1	1,170	3	10,410
NAVAJO COUNTY	64	1,224,962	2	56,640	—	—	3	15,600	69	1,297,202
Holbrook	3	50,000	—	—	—	—	—	—	3	50,000
Show Low	4	34,924	—	—	—	—	—	—	4	34,924
Snowflake	3	N/C	—	—	—	—	—	—	3	N/C
Taylor	1	3,000	—	—	—	—	—	—	1	3,000
Unincorporated Navajo County	52	1,127,038	2	56,640	—	—	—	—	54	1,183,678
Winslow	1	10,000	—	—	—	—	3	15,600	4	25,600
PIMA COUNTY	829	21,601,885	40	17,762,415	2	126,600	440	3,586,179	1,311	43,077,079
Marana	1	N/C	—	—	—	—	1	N/C	2	N/C
Oro Valley	2	150,000	—	—	—	—	—	—	2	150,000
South Tucson	14	108,322	1	800	—	—	—	—	15	109,122
Tucson	284	6,209,913	18	11,732,115	2	126,600	194	3,163,777	498	21,232,405
Unincorporated Pima County	528	15,133,650	21	6,029,500	—	—	245	422,402	794	21,585,552
PINAL COUNTY	93	834,341	5	261,746	—	—	25	198,350	123	1,294,437
Casa Grande	12	177,958	2	151,746	—	—	4	8,400	18	338,104
Coolidge	27	75,754	—	—	—	—	5	16,000	32	91,754
Eloy	4	52,800	—	—	—	—	1	8,000	5	60,800
Florence	1	3,500	—	—	—	—	2	135,350	3	138,850
Kearny	1	1,000	—	—	—	—	1	100	2	1,100
Mammoth	—	—	1	N/C	—	—	—	—	1	N/C
Superior	2	2,000	—	—	—	—	1	900	3	2,900
Unincorporated Pinal County	46	521,329	2	110,000	—	—	11	29,600	59	660,929
SANTA CRUZ COUNTY	27	751,144	2	102,196	—	—	6	144,774	35	998,114
Nogales	19	447,725	1	92,196	—	—	1	99,820	21	639,741
Patagonia	—	—	—	—	—	—	2	260	2	260
Unincorporated Santa Cruz County	8	303,419	1	10,000	—	—	3	44,694	12	358,113
YAVAPAI COUNTY	202	5,015,991	9	573,205	1	36,000	75	442,468	287	6,067,664
Chino Valley	9	225,100	—	—	—	—	8	3,515	17	228,615
Clarkdale	3	21,500	—	—	—	—	1	70,172	4	91,672
Cottonwood	10	134,046	1	9,995	—	—	2	650	13	144,691
Jerome	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Prescott	47	862,426	7	522,960	—	—	41	281,053	95	1,666,439
Unincorporated Yavapai County	111	3,474,991	—	—	—	—	23	87,078	134	3,562,069
Prescott Valley	22	297,928	1	40,250	1	36,000	—	—	24	374,178
YUMA COUNTY	126	2,251,593	17	1,734,015	—	—	10	50,157	153	4,035,765
Parker	3	10,150	—	—	—	—	—	—	3	10,150
Somerton	2	26,500	—	—	—	—	1	1,000	3	27,500
Unincorporated Yuma County	99	1,787,959	15	1,648,025	—	—	1	2,150	115	3,438,134
Wellton	1	4,000	—	—	—	—	—	—	1	4,000
Yuma	21	422,984	2	85,990	—	—	8	47,007	31	555,981
TOTAL Maricopa County, November, 1980	1,859	46,042,530	150	53,369,011	40	12,038,842	1,239	11,225,101	3,288	122,675,484
TOTAL Maricopa County, November, 1979	1,907	39,592,724	259	34,005,104	56	10,507,526	1,802	25,763,180	4,024	109,868,534
PERCENT CHANGE	-3.	16.	-42.	57.	-29.	15.	-31.	-56.	-18.	12.
TOTAL Arizona, November, 1980	3,757	87,497,426	266	77,481,432	43	12,201,442	2,112	16,213,763	6,178	193,394,063
TOTAL Arizona, November, 1979	4,118	77,297,473	452	57,143,998	58	10,638,526	2,455	33,592,931	7,083	178,672,928
PERCENT CHANGE	-9.	13.	-41.	36.	-26.	15.	-14.	-52.	-13.	8.

*Includes mobile homes.

N/R: No report.

N/C: Not collected.

Arizona New Housing Starts: Monthly Report

NOVEMBER, 1980

BUILDING PERMITS ISSUED						BUILDING PERMITS ISSUED					
	1*		3-4	5 or	Housing		1*		3-4	5 or	Housing
	Family	Duplex	Families	More	Units		Family	Duplex	Families	More	Units
APACHE COUNTY	8	—	—	—	8	MOHAVE COUNTY	144	—	2	—	152
Eagar	3	—	—	—	3	Kingman City	13	—	—	—	13
St. Johns	2	—	—	—	2	Kingman Area	20	—	2	—	28
Springerville	—	—	—	—	—	Lake Havasu City	42	—	—	—	42
Uninc. Apache Co.	3	—	—	—	3	Lake Havasu Area	1	—	—	—	1
COCHISE COUNTY	43	—	—	—	43	Mohave Valley North	38	—	—	—	38
Benson	1	—	—	—	1	Mohave Valley South	24	—	—	—	24
Bisbee	—	—	—	—	—	Dolan Springs	2	—	—	—	2
Douglas	3	—	—	—	3	Sacramento Valley	4	—	—	—	4
Huachuca City	—	—	—	—	—	Mohave Co. General	—	—	—	—	—
Sierra Vista	11	—	—	—	11	NAVAJO COUNTY	43	—	—	—	43
Tombstone	1	—	—	—	1	Holbrook	1	—	—	—	1
Uninc. Cochise Co.	27	—	—	—	27	Show Low	3	—	—	—	3
Willcox	—	—	—	—	—	Snowflake	2	—	—	—	2
COCONINO COUNTY	64	1	—	1	73	Taylor	—	—	—	—	—
Flagstaff	14	1	—	1	23	Uninc. Navajo Co.	37	—	—	—	37
Fredonia	—	—	—	—	—	Winslow	—	—	—	—	—
Page	9	—	—	—	9	PIMA COUNTY	552	5	2	9	1,163
Uninc. Coconino Co.	39	—	—	—	39	Marana	1	—	—	—	1
Williams	2	—	—	—	2	Oro Valley	2	—	—	—	2
GILA COUNTY	30	—	—	—	30	South Tucson	2	—	—	—	2
Globe	2	—	—	—	2	Tucson	156	5	2	9	767
Hayden	—	—	—	—	—	Uninc. Pima Co.	391	—	—	—	391
Miami	—	—	—	—	—	PINAL COUNTY	37	—	2	—	45
Payson	12	—	—	—	12	Casa Grande	2	—	—	—	2
Uninc. Gila Co.	16	—	—	—	16	Coolidge	2	—	—	—	2
GRAHAM COUNTY	20	—	1	—	24	Eloy	1	—	—	—	1
Pima	—	—	—	—	—	Florence	—	—	—	—	—
Safford	2	—	1	—	6	Kearny	—	—	—	—	—
Thatcher	5	—	—	—	5	Mammoth	—	—	—	—	—
Uninc. Graham Co.	13	—	—	—	13	Superior	1	—	—	—	1
GREENLEE COUNTY	—	—	—	—	—	Uninc. Pinal Co.	31	—	2	—	39
Clifton	—	—	—	—	—	SANTA CRUZ COUNTY	15	—	—	—	15
Duncan	—	—	—	—	—	Nogales	7	—	—	—	7
Uninc. Greenlee Co.	—	—	—	—	—	Patagonia	—	—	—	—	—
MARICOPA COUNTY	1,187	17	16	34	2,142	Uninc. Santa Cruz Co.	8	—	—	—	8
Avondale	7	—	—	—	7	YAVAPAI COUNTY	132	9	—	—	156
Buckeye	3	—	—	—	3	Chino Valley	9	—	—	—	9
Chandler	42	1	3	—	54	Clarkdale	1	—	—	—	1
El Mirage	3	—	—	—	3	Cottonwood	2	2	—	—	6
Gila Bend	—	—	—	—	—	Jerome	N/R	N/R	N/R	N/R	N/R
Gilbert	3	—	—	—	3	Prescott	21	3	—	—	33
Glendale	307	—	1	—	311	Uninc. Yavapai Co.	87	4	—	—	95
Goodyear	—	—	—	—	—	Prescott Valley	12	—	—	—	12
Guadalupe	—	—	—	—	—	YUMA COUNTY	70	1	7	2	108
Mesa	77	8	6	1	450	Parker	—	—	—	—	—
Paradise Valley	11	—	—	—	11	Somerton	1	—	—	—	1
Peoria	11	—	—	—	11	Uninc. Yuma Co.	63	1	6	2	98
Phoenix	367	5	1	6	500	Wellton	—	—	—	—	—
Scottsdale	45	1	1	26	451	Yuma	6	—	1	—	9
Surprise	2	—	—	—	2	TOTAL, Maricopa	1,187	17	16	34	2,142
Tempe	33	—	3	1	52	Co., November, 1980	1,187	17	16	34	2,142
Tolleson	—	—	—	—	—	TOTAL, Maricopa	1,168	15	19	30	2,056
Uninc. Maricopa Co.	270	2	1	—	278	Co., November, 1979	1,168	15	19	30	2,056
Wickenburg	2	—	—	—	2	PERCENT CHANGE	2.	13.	-16.	13.	4.
Youngtown	4	—	—	—	4	TOTAL, Arizona,	2,345	33	30	46	4,002
						November, 1980	2,345	33	30	46	4,002
						TOTAL, Arizona,	2,523	28	23	42	3,906
						November, 1979	2,523	28	23	42	3,906
						PERCENT CHANGE	-7.	18.	30.	10.	2.

*Includes mobile homes.

N/R: No Report.

Retail Food Prices

DECEMBER, 1980

Retail food prices in Maricopa County rose 1.4 percent in December, following an 0.8 percent gain in November.

The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The December index of 255.6 indicates that shoppers would now have to pay \$25.56 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$23.13 one year ago. The December, 1980 index reflects a 10.5 percent increase over the December, 1979 value.

The gain in this month's index was a result of increases in all of the subgroups. The largest hikes occurred in *Dairy Products* and *Fruits and Vegetables* (both 2.5 percent), followed by gains of 1.2 percent in *Meats, Poultry, Fish, and Eggs* and 0.9 percent in *Other Foods*. *Cereals and Bakery Products* showed a modest 0.2 percent increase.

Prices in all categories of *Dairy Products* were higher this month than in November, except for butter. Increases included 2.6 percent for cheese, 3.8 percent for ice cream and related products, and 8.2 percent for other dairy products.

A surge in tomato prices (45.3 percent) led the increase in *Fruits and Vegetables*. Miscellaneous fresh vegetables also increased (16.4 percent), which includes carrots, celery, green beans, and cucumbers. These in-

creases were partially offset by decreases in the prices of lettuce (-16.6 percent) and potatoes (-8.0 percent).

Climbing prices for beef, poultry, and eggs contributed to gains in *Meats, Poultry, Fish, and Eggs* in December. Prices for eggs jumped 8.2 percent, followed by noncanned ham (6.1 percent, the fifth straight month of large increases), poultry other than chicken (particularly turkey; 6.0 percent), and ground beef (4.2 percent). These increases were partially counteracted by lower prices for lunchmeat, fish and seafood, and pork.

Increases in several categories of *Other Foods* contributed to that group's overall gain. The largest price increases were for cola drinks, excluding diet cola, (8.1 percent); and nuts, potato chips, and other snacks (particularly peanuts, 5.4 percent). Falling prices were noted for carbonated drinks other than colas (-9.9 percent, due to several sales in December) and for coffee, both roasted (-2.8 percent) and freeze dried and instant (-2.4 percent). Coffee prices fell for the third consecutive month.

Most *Cereal and Bakery Products* had little change in price in December. Cereals increased 2.5 percent and sweetrolls, coffeecake and doughnuts increased 2.0 percent. Fresh cakes and cupcakes decreased 3.4 percent.

A comparison of September Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a foodstuffs group in September, 1980 (obtainable for an outlay of \$10.00 at 1967 average prices) were \$24.95 in Maricopa County; \$25.81 in Los Angeles-Long Beach; \$25.78 in San Francisco-Oakland; \$26.07 in Chicago-Northwestern Indiana; and averaged \$25.89 in the United States.

INDEX FOR FOOD CONSUMED AT HOME
(Average 1967 = 100 percent)

	Maricopa County Dec. '80 ^a	Maricopa County Sept. '80 ^b	United States Sept. '80	Los Angeles- Long Beach ^c Sept. '80	San Francisco- Oakland ^c Sept. '80	Chicago ^c North- western Indiana Sept. '80
Food Consumed at Home	255.6	249.5	258.9	258.1	257.8	260.7
Cereals and Bakery Products	237.7	231.7	250.3	260.0	256.6	256.7
Meats, Poultry, Fish, and Eggs	264.6	258.3	251.8	254.0	257.0	259.5
Dairy Products	225.5	213.7	230.6	225.1	225.7	224.9
Fruits and Vegetables	236.9	239.8	257.4	245.9	245.7	255.8
Other Foods Consumed at Home	283.6	275.7	309.2	305.1	309.6	312.5

^aComputed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

^bMaricopa County food prices are reported for the month closest to publication.

^cComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index Comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indices cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Metropolitan Phoenix Consumer Price Index

FOURTH QUARTER, 1980

Prices of consumer goods and services in the Phoenix metropolitan area rose 3.3 percent during the fourth quarter of 1980, a higher increase than the third quarter rate of 2.6 percent. The rise in prices for the Phoenix area is higher than the increase posted for the United States as a whole (2.7 percent), but is equal to the increase for the comparison city of Los Angeles-Long Beach (3.3 percent) and considerably less than the 6.0 percent for Chicago. Since the fourth quarter of 1979, the 13.3 percent change for Phoenix is higher than the 12.6 percent increase for the nation as a whole, but lower than the increase for Chicago (15.1 percent) and Los Angeles-Long Beach (14.0 percent).

The Consumer Price Index (CPI) for the Phoenix metropolitan area, on which these inflation measures are based, is prepared by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. The quarterly CPI is based on comprehensive surveys conducted by the Bureau of Business and Economic Research in cooperative cosponsorship with Valley National Bank.

In the category of *Food*, Food at Home rose 3.1 percent in the fourth quarter, slightly less than in the third quarter but still higher than in the first half of 1980. Meats, Poultry, Fish, and Eggs (3.9 percent) and Dairy Products (3.8 percent) led the increase in Food at Home costs in the fourth quarter. Phoenix area Food at Home fourth quarter price increases compare unfavorably with the United States, Chicago, and Los Angeles-Long Beach averages of 2.3 percent, 2.1 percent, and 2.2 per-

cent respectively. For the entire year, Food at Home increases in Phoenix are comparable to those of the comparison cities and the nation as a whole. Food Away From Home price increases in Phoenix in the fourth quarter (2.6 percent) were also slightly less than the rate of the third quarter. Food Away From Home costs have increased 15.6 percent since the fourth quarter of 1979, a rate exceeding that of most items of the CPI.

The price index for *Housing* increased 3.8 percent in the fourth quarter, up from the 2.5 percent increase of the third quarter. A major increase in contracted mortgage interest cost caused the index for the homeownership category to increase 7.0 percent. Home purchase prices rose less steeply at 2.8 percent. Residential rent continued to have another small increase, only 0.4 percent during the fourth quarter. A decrease in fuel and utility costs of 6.0 percent partially offset the large increase in homeownership costs. This decrease was due to a seasonal decrease in electricity rates, which dropped 18.9 percent from the third quarter.

The change in *Housing* from one year ago is 14.4 percent, comparing favorably with the Los Angeles-Long Beach increase of 16.9 percent and the Chicago increase of 19.4 percent, but higher than the United States figure of 13.7 percent. Most housing components in Phoenix had a smaller increase than the 14.4 percent; contracted mortgage interest costs were 40.6 percent higher than a year ago. These mortgage costs contributed one-fifth of the total 13.3 percent increase in the overall CPI from one year ago. The increases in other

housing items from one year ago are as follows: residential rent, 4.8 percent; home purchase, 10.4 percent; fuel and utilities, 5.9 percent; household furnishings and operations, 6.6 percent.

Apparel and Upkeep rose at a quarterly rate of 0.9 percent. Decreases in the cost of clothing were offset by increases in footwear (due to the many sales in the previous quarter) and in upkeep expenses such as laundry and dry cleaning. The 3.0 percentage change from a year ago is considerably below the change in the United States as a whole (7.6 percent), Chicago (5.1 percent), and Los Angeles-Long Beach (8.2 percent).

Transportation costs in the Phoenix area posted a 2.4 percent increase in the fourth quarter, up slightly from the previous quarter. The increase from a year ago of 13.1 percent is less than the rates of the nation as a whole (15.2 percent), and the comparison cities of Chicago (15.5 percent) and Los Angeles-Long Beach (13.7 percent). Private transportation in Phoenix increased 1.9 percent over last quarter, due largely to a 9.5 percent increase in new car prices. Other private transportation costs remained relatively stable, including gasoline costs and insurance costs. After large increases in the first quarter of 1980, private transportation costs increased only 2.7 percent the rest of the year. Public transportation costs, however, continued to increase rapidly with an 11.0 percent rise in the fourth quarter.

This sharp increase in the fourth quarter is due to higher airline fares, intercity train fares, and taxi fares. Public transportation costs have increased 28.4 percent since the end of 1979.

Medical Care in the Phoenix area rose by 2.2 percent in the fourth quarter, a more moderate rise than the third quarter's 3.8 percent. The total increase during the past year was 11.3 percent, which is less than the change for Chicago (12.8 percent) and Los Angeles-Long Beach (12.5 percent), but greater than the change for the nation as a whole (10.7 percent).

Entertainment costs jumped 7.0 percent in the fourth quarter, a much higher rate than the third quarter's 2.3 percent. Higher costs for sporting goods and equipment, admission fees, and club and membership dues (due to seasonal factors) contributed to this fourth quarter increase. *Entertainment* costs in the Phoenix area have increased 20.6 percent since a year ago, about twice the rate of the United States (9.5 percent) and the comparison cities of Chicago (10.5 percent) and Los Angeles-Long Beach (9.7 percent).

The costs of *Other Goods and Services* rose by 3.6 percent during the fourth quarter, a somewhat higher rate than in the third quarter. Most of the items in this category increased in cost, led by tobacco products and smoking accessories.

Note: The complete Metropolitan Phoenix Consumer Price Index and the percentage changes for the United States and comparative cities are found on page 30.

METROPOLITAN PHOENIX CONSUMER PRICE INDEX
FOURTH QUARTER, 1980
(1969 = 100)

Group	Third Quarter 1980 Index	Fourth Quarter 1980 Index	Percentage Change from Last Quarter	Percentage Change from One Year Ago
ALL ITEMS	228.4	235.8	3.3	13.3
Food and Beverages	224.2	230.5	2.8	12.4
Food	229.7	236.5	3.0	12.4
Food at Home	240.7	248.2	3.1	11.1
Cereal and Bakery Products	236.2	241.0	2.0	10.6
Meats, Poultry, Fish, and Eggs	227.5	236.3	3.9	9.4
Dairy Products	207.6	215.6	3.8	8.8
Fruits and Vegetables	225.9	230.4	2.0	12.4
Other Food at Home	234.1	240.8	2.9	12.8
Food Away From Home	198.1	203.4	2.6	15.6
Alcoholic Beverages	153.1	154.1	0.6	10.8
Housing	228.2	236.9	3.8	14.4
Shelter	237.4	251.0	5.7	17.5
Rent, Residential	177.5	178.3	0.4	4.8
Homeownership	247.4	264.8	7.0	20.5
Fuel and Other Utilities	252.0	236.8	-6.0	5.9
Household Furnishings and Operations	187.9	191.7	2.0	6.6
Apparel and Upkeep	179.9	174.5	0.9	3.0
Apparel Commodities	164.3	164.1	-0.1	-0.8
Men's and Boys' Apparel	150.9	150.6	-0.2	3.6
Women's and Girls' Apparel	163.1	159.4	-2.3	-3.6
Footwear	190.7	201.4	5.6	-4.4
Transportation	242.6	248.4	2.4	13.1
Private Transportation	240.9	245.4	1.9	12.2
Public Transportation	270.0	299.6	11.0	28.4
Medical Care	310.4	317.3	2.2	11.3
Entertainment	189.1	202.2	7.0	20.6
Other Goods and Services	218.4	226.2	3.6	11.9
Personal Care	216.1	222.2	2.8	11.8

UNITED STATES AND COMPARATIVE CITIES

Group	United States		Chicago		LA-Long Beach	
	Percentage Change From Last Quarter	Percentage Change From One Year Ago	Percentage Change From Last Quarter	Percentage Change From One Year Ago	Percentage Change From Last Quarter	Percentage Change From One Year Ago
ALL ITEMS	2.7	12.6	6.0	15.1	3.3	14.0
Food	2.2	10.6	2.0	9.9	2.2	9.8
Food at Home	2.3	11.1	2.1	10.3	2.2	10.7
Food Away From Home	2.2	9.6	1.8	9.2	2.2	8.1
Housing	3.0	13.7	10.6	19.4	4.3	16.9
Shelter	4.0	15.2	15.6	23.1	5.4	18.3
Fuel & Utilities	-0.4	13.4	-3.7	12.8	-5.3	18.3
Household Furnishings & Operations	1.8	8.1	1.8	9.0	4.2	8.6
Apparel and Upkeep	3.5	7.6	2.1	5.1	1.8	8.2
Transportation	2.5	15.2	2.8	15.5	2.6	13.7
Medical Care	2.3	10.7	0.5	12.8	2.7	12.5
Entertainment	1.5	9.5	1.8	10.5	2.0	9.7
Other Goods and Services	3.9	9.8	5.1	10.6	2.9	11.5

Source: Metropolitan Phoenix data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University; other data from U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

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Report To The Reader

One of the most widely discussed topics in today's business world is productivity. Because of this high interest, the feature articles in this issue of *Arizona Business* are devoted to several aspects of the problem of productivity.

The first article, "Declining Productivity: Trends and Causes," by Dr. George Bohlander is an overview, which shows that the problem is not simple nor is it easily solved. Just finding consistent data posed problems for the author. Nevertheless, American productivity is declining. "Strong productivity growth is a fundamental contributor to a rising standard of living, increased employment and higher real wages, strong international competitiveness, and improved business profits," says Dr. Bohlander. "The United States . . . has had no clear policy for directing economic development Perhaps now is the time to formulate that national framework."

Dr. William Werther deals with the people aspect of productivity in his article, "Productivity Improvement through People." He discusses the concept of employee involvement, which teaches nonmanagement employees to be problem solvers. Techniques such as quality circles, team-building, and suggestion systems can be useful. According to Dr. Werther, "Even the most competent and capable managers must seek the good ideas of their employees."

In his article, "Productivity Measurement," Dr. William Ruch addresses the problem of measuring productivity. For those seeking a comprehensive measurement system, Dr. Ruch outlines computations that yield productivity ratios as well as price recovery ratios. "The two total measures of productivity and price recovery give a good overall evaluation of the success of the firm — far better than profit or return on assets alone," he says.

As further evidence of the prominence of the topic, this year's Town Hall of Business sponsored by Beta Gamma Sigma business honorary will discuss a recent article on productivity. The Town Hall will be held on March 27 from 4:00 to 5:30 p.m. at the Fiesta Inn. The article to be discussed appeared in the October 21, 1981 issue of the *Wall Street Journal* under the heading "Many Culprits Named in National Slowdown of Productivity Gains." For further information, contact Dr. Louis Grossman, at Arizona State University, 965-6216 or 965-3431.

Declining Productivity: Trends and Causes

GEORGE W. BOHLANDER

Consider these facts: American factories are closing at an alarming rate. Recently a Ford plant in Mahwah, New Jersey and U.S. Steel mills in Youngstown, Ohio and Pittsburgh, Pennsylvania were closed, never to reopen. America continues to lose its share of international trade as the competitive advantage once maintained by American industry erodes. During the decade of the 1970s, total American industry lost 23 percent of its share of world market trade. In 1979, based on units sold, foreign auto producers captured nearly 30 percent of the United States market. Automobile imports were negligible in 1960 and represented about 15 percent of total United States auto sales in 1970. Furthermore, our decay in world markets occurred during a period of dollar devaluation, which made American exports cheaper and foreign imports more expensive.

Although American productivity showed consistent growth through 1967, it has since slowed and even declined. Six major factors are generally cited as causing today's productivity lag in the United States: reduced capital investment, slowed technological innovation, changing labor force characteristics, intersectoral labor shifts, government regulations, and a decline in the growth rate of the GNP.

George W. Bohlander is a faculty member in the Department of Management, College of Business Administration, Arizona State University.

In 1980 the United States standard of living ranked fifth among the industrial nations of the world; yet as recently as 1972, the nation's living standard was the highest among the developed nations. The United States inflation rate in 1979 was higher than the average of all industrial countries for the first time in history,¹ and high annual inflation rates continue, generally outstripping yearly wage gains. The result is a loss of "real wages" to workers, rising unemployment, and increased social welfare costs.

This list of American social and industrial ills is not exhaustive and could be expanded to include shrinking real corporate profits, a declining growth rate for real gross national product (GNP), soaring energy prices, and fluctuating but upward pressure on interest rates. Economic and business authorities generally cite the continuing decline in the United States productivity as the primary culprit in these problems. The Council of Economic Advisors to the President described the slowdown in productivity growth as one of the most significant economic problems in recent years, and productivity growth is seen as fundamental in reversing the problems noted previously.

Thus, it is not surprising that improved economic growth has achieved national awareness. Productivity centers have emerged;² Congress has held hearings on the subject; the President has appointed a commission on productivity; and economists have studied the issue with increased interest. Unfortunately, knowledge

about many aspects of productivity is still largely untapped. The field abounds with misunderstandings, conflicting statistics, and various prescriptions to cure the illness.

The purpose of this article is to synthesize recent reports and statistics highlighting the American productivity problem. Included here is a definition of productivity and productivity trends. The second section focuses on various factors affecting industrial growth or decline, and the article concludes by discussing future productivity growth rates and prospects for improvement.

PRODUCTIVITY DEFINED AND MEASURED

Many of the misunderstandings about productivity begin with its definition. For example, it has been described by top executives as synonymous with higher profits, increased return on assets, or other financial figures. Middle managers frequently associate the term with the increased production of goods or services, while workers or union officials define productivity as working harder, the "speed up," employment layoffs, or more work for less pay. Others confuse "productivity" with "production," which means more and more goods, suggesting wasteful consumption of scarce resources. To the general public, productivity is an instrument for increasing wealth and leisure, thereby improving the material well-being of the population. To each of these groups, the term elicits strong emotional appeals grounded in personal and organizational needs. While productivity improvements may cause all — or none — of these views, the misconceptions in defining the term produce conflicting goals for productivity improvement at both the national and organizational level.

In economic parlance, productivity is simply the relationship between the amount of goods or services produced (output) and one or more inputs (capital, materials, labor, etc.) used to produce that output: automobiles made per man-hour, claims processed per week, tires repaired per workday, or tons produced per BTU. In aggregate terms, *total factor productivity* relates all goods and services produced to all resources used to produce those goods or services. To determine productivity gains (losses), the productivity ratio of output to input is compared over a time period — monthly, quarterly, or yearly.³ Measurements are normally expressed in constant as opposed to current dollars and are often characterized as "real." Productivity is higher or has improved when the same amount of input produces more goods or services or higher

quality goods or services, or when the same amount of output can be produced with less input.

While the concept of productivity is deceptively simple, the measurement of productivity is extremely complex. Some of the problems rest in defining outputs and inputs, and in terms of measurement accuracy and concept.⁴ For example, quantifying outputs in the service sector is a continuing problem since the product is often intangible and difficult to measure. Also, few organizations produce only one product or service. Where a single process produces more than one product, aggregating these products or services into a single measure of output requires a weighting system to represent the importance of individual components in a unit of output.⁵ Problems in measuring input occur when more than one input contributes to the final goods or service produced. Output changes are attributable to different input variables including changing technology, improved production techniques, labor skill and knowledge, and quality of the work environment. Increases in productivity are more correctly viewed as savings in the labor input resulting from the combined effect of all inputs and the way they are utilized in the production of output. Productivity ratios, however, are usually based on output relative to a single (i.e., partial) input. When output changes, the tacit assumption is that the change is caused by the single input measured, which may or may not be true.

Although many different productivity measures are calculated, the relationship most frequently encountered relates output to unit of labor input. At the national level, the figure normally cited is the Bureau of Labor Statistics (BLS) measure of output per hour of all employed persons in the private sector. The BLS productivity measure includes the private service sector but excludes all levels of government. It should be noted that labor productivity simply indicates how much labor time is associated with a given volume of output. It does not measure changes in the efficiency of labor.

With today's emphasis on productivity improvement, the measurement of productivity is becoming increasingly important. As we enter the 1980s, we can expect the proliferation of new productivity ratios, including increased emphasis on "total factor" productivity. Input partials such as energy, capital, and materials will receive heightened attention along with our traditional measure — labor. An organization wishing to improve total productivity performance will define and measure the gains and trade offs of partial productivity ratios in order to achieve optimum performance.

UNITED STATES PRODUCTIVITY TRENDS

Perhaps the single best index of a nation's vitality is its productivity performance. The ability to produce more in less time and with fewer resources contributes to a steadily rising standard of living, creates new jobs, and provides greater amounts and varieties of goods and services.

Growth

The economic growth of the United States has rested largely on the country's ability to demonstrate consistent productivity improvement over many years. John Kendrick, an expert on productivity growth, notes that while output per labor input has fluctuated since 1800, it has remained constantly positive.⁶ Over the years 1800 to 1855, output per worker grew at a rate of 0.5 percent per year. Between 1855 and 1900, average annual productivity increased by 1.1 percent, and labor productivity grew by approximately 2.0 percent annually between 1900 and 1920. Despite the Great Depression, the nation's productivity increased by 2.2 percent annually between 1920 and 1948.

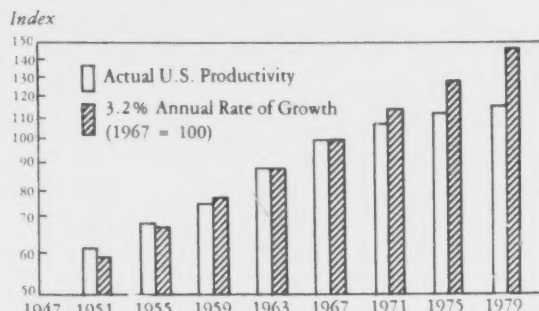
Figure I shows the progress of labor productivity in the American business economy for the years 1947 through 1979. A prominent characteristic of the figure is the significant 3.2 percent average annual rate of growth between 1947 and 1967. During this period an annual productivity improvement of 3.2 percent became regarded as normal growth and was adopted as a noninflationary guidepost for union wage negotiations.⁷

Decline

Beginning in 1968 the nation's average rate of economic growth began slipping. Average productivity declined to 2.1 percent per year between 1967 and 1973 and to 0.6 percent for the years 1973 to 1979. The data for 1978 and 1979 are particularly disturbing. In 1978 productivity grew by only 0.5 percent; in 1979 productivity actually declined by 0.9 percent. This faltering productivity growth rate between 1968 and 1979 significantly affected the American economy. Had the American productivity growth of 3.2 percent for the 1947-1967 interval continued through 1979, the 1979 index of 118.1 (Figure I) would have risen 27.6 points to 145.7. This economic growth would have represented an increase in the gross national product of \$348 billion greater than the actual output of 1979.⁸ While

FIGURE I

COMPARISON OF ACTUAL PRODUCTIVITY GROWTH TO 3.2 PERCENT AVERAGE ANNUAL GROWTH, 1947-1979
(Private Sector Employment Output Per Hour)



Source: U.S. Bureau of Labor Statistics.

1980 productivity figures are not yet available, preliminary estimates indicate that productivity will again decline by approximately 0.5 percent.

Aggregate national figures mask productivity figures for individual industries. Lester Thurow, analyzing productivity trends for twelve types of private industries accounting for 86 percent of GNP, showed that productivity declines were pervasive for all twelve industries.⁹ However, over the 1948-1977 period studied by Thurow, the industries incurred varying degrees of decline over disaggregated time spans (see Table 1). For the latest period reported, 1972-1977, three of the twelve industries (mining, construction, wholesale trade) actually experienced negative rates of productivity growth, while another three industries (electric, gas, and sanitary services; retail trade; and services) had growth figures below the 1.2 percent five-year average. The only industry to experience an accelerated productivity growth rate between 1972 and 1977 was communications.

Despite these gloomy figures, the United States still remains the most productive nation in the world. American employees produce more per hour than their foreign counterparts based on the U.S. level of real gross national product per employee. However, other nations are fast closing this competitive edge, particularly Japan, West Germany, and France. For example, in 1978 the average Japanese worker produced approximately 63 percent as much as an American worker; in Germany and France 85 percent. Based on projections by the American Productivity Center, by 1990 the out-

TABLE 1
RATES OF PRODUCTIVITY GROWTH

	1948-65	1965-72	1972-77
Agriculture, forestry, fisheries	5.0	4.1	2.4
Mining	4.3	2.4	-5.1
Construction	3.4	-1.8	-0.8
Nondurable goods, manufacturing	3.3	3.2	2.6
Durable goods, manufacturing	2.8	2.3	1.3
Transportation	3.1	2.4	2.1
Communications	5.4	4.5	6.5
Electricity, gas, and sanitary services	6.3	3.4	1.0
Wholesale trade	3.2	4.0	-0.1
Retail trade	2.6	1.8	1.0
Finance, insurance and real estate	2.0	0.8	1.4
Services	1.2	1.6	0.2
Average	3.3	2.3	1.2

Source: Lester C. Thurow, "The U.S. Productivity Problem," *Data Resources U.S. Review*, August 1979, reported by Eli Shapiro, *Policies for Productivity Growth* (The American College, Bryn Mawr, Pennsylvania, 1979), pp. 7-8.

put of Japanese workers will almost equal that of American employees, while German and French workers will exceed American workers by approximately 15 percent.¹⁰

INTERNATIONAL COMPARISONS

Deteriorating United States productivity is magnified when contrasted with the growing economies of the major industrial nations of the world. America's productivity slippage in the world arena is significant since it contributes to our high inflation rate and our decline in international trade competitiveness. As a share of world trade, United States exports dropped from 21 percent in 1957 to 12 percent in 1979 at a time when United States total world imports continued to rise. As a percentage of GNP, American total imports accounted for 9.3 percent of total GNP in 1979, a figure substantially above the 1978 level of 8.6 percent. American decline in international competitiveness represents billions in lost production and the loss of thousands of industrial jobs.

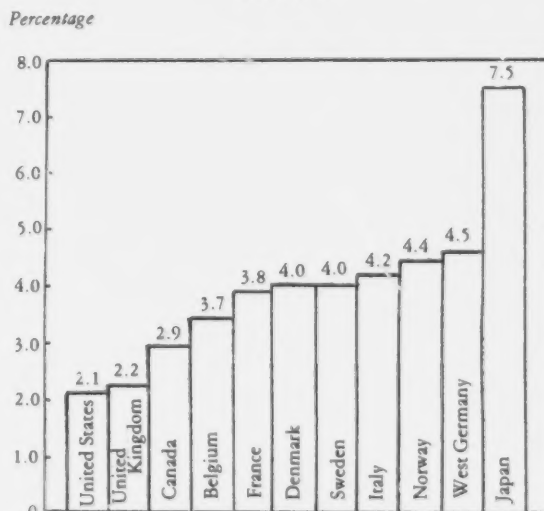
Figure II compares the United States average annual productivity growth rate to ten industrial countries for the years 1950 through 1978. Over this twenty-eight year period, the average annual rate of growth for the

eleven countries equaled 3.9 percent. Six countries exceeded this economic growth rate (Denmark, Sweden, Italy, Norway, West Germany, Japan) while five nations had growth rates below this figure (the United States, Britain, Canada, Belgium, France). The average annual productivity growth for the United States was 2.1 percent, well below the 3.9 average annual rate and the lowest productivity growth rate of the eleven nations. During 1950-1978, three countries (Italy, Norway, West Germany) actually doubled the United States growth rate while Japan more than tripled the percentage.

In reality, cyclical growth rates have been significant for the countries listed in Figure II. For example, the United States rode the post-World War II productivity growth wave for twenty years (1947-1967) before experiencing deteriorating growth rates between 1965-1973. Japan and Italy actually increased their rates of productivity during the 1965-1973 period, while France and Germany maintained very high rates of improvement.¹¹ The industrial growth for all countries declined badly following the 1973 oil embargo by the Organization of Petroleum Exporting Countries (OPEC) and the worldwide recession of 1973-1978. Between 1973 and 1978,

FIGURE II

AVERAGE ANNUAL PRODUCTIVITY GROWTH Output per Employee Hour 1950-1978



Source: U.S. Bureau of Labor Statistics.

Japan's average annual growth fell to 3.1 percent, and West Germany's fell to 3.2 percent. The decline experienced earlier in the United States, Britain, and Canada continued, with these countries registering marginal growth rates of 0.4 percent, 0.9 percent, and 0.8 percent for the 1973-1978 period. Statistics from the Organization for Economic Cooperation and Development (OECD) for 1979 show productivity growth rates of 3 percent for France, 3.5 percent for Germany, and 4.5 percent for Japan, a sharp contrast to the approximately 1 percent productivity decline experienced in the United States. Estimates from the Economic Report of the President and OECD predict that in 1980 the United States will show a growth decline of 0.5 percent, Canada will experience no growth, Japan will increase productivity by 4.5 percent, and France and Germany will grow by 3.0 percent and 3.5 percent respectively.¹²

One of the remarkable features of the world economy has been the productivity performance of Japan, which in the past twenty-five years has grown from a modest GNP with low levels of output per worker and productivity to the third largest GNP in the world.¹³ Factors contributing to Japan's rapid development include a unique government-business relationship, a high level of capital investment, encouragement of high technology industries, emphasis on rapid growth over short-term profits, and a unique employee-management relationship combined with culture-specific characteristics of the country.¹⁴ The wide gaps in productivity growth trends between the United States and Japan are also due to the reindustrialization of war-torn industries with modern technology aided by American financial support and technical and managerial knowledge. Although Japanese growth has slowed since the petroleum cartel of 1973 and the quantum increases in oil prices, Japan is expected to continue developing at a sharp pace but below the 7.5 percent average annual rate of 1950-1978.

CAUSES OF LAGGING PRODUCTIVITY

America's productivity decline has been attributed to a great many factors. While researchers have recognized as many as fifteen variables affecting economic growth, six major factors are generally cited as causing today's productivity lag: reduced capital investment, slowed technological innovation, changing labor force characteristics, intersectoral labor shifts, government regulations, and slowing national economic growth. Since these variables interact concurrently, there is no general agreement about the quantitative effects of each variable on overall productivity decline.

Capital Investment

Productivity experts agree that a major contributor to long-term economic growth is capital expenditures. Growth in capital stock at a rate faster than growth in labor (i.e., the capital/labor ratio) is critical for technological progress and a growing GNP. The output of workers rises when new technology replaces old equipment and workers have both more and better capital facilities. While adding to existing productive capacity, capital investment further contributes to technological innovation through expenditures on research and development.

Capital investment in the United States increased rapidly in the 1960s, but slowed dramatically during the past decade. The average annual percentage increase for private, nonresidential fixed investment reached a peak of 4.7 percent between 1957-1969, following World War II. For the ten-year period 1969-1979, capital investment outlays declined to an average annual increase of only 2.7 percent.¹⁵ It is significant that as a percentage of total capital investment industrial machinery accounted for 12 percent of capital acquisitions in 1979; twenty years earlier this category reflected 20 percent of total spending.

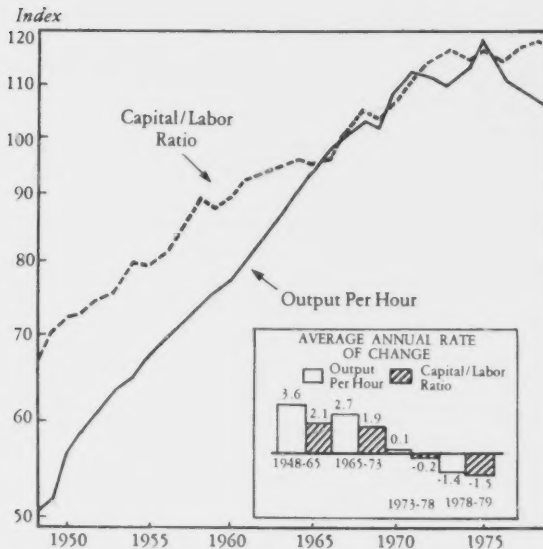
The effects of lower capital spending on productivity can be demonstrated through the relationship between the capital/labor ratio and economic growth. Figure III illustrates this connection. Lower investment in capital stock has, in recent years, translated into shrinkage in the ratio. This, in turn, contributed greatly to the nation's loss of productivity growth after 1977. According to the American Productivity Center:

During the span 1948-1965, capital stock per worker grew at an annual rate of about 2.0 percent per year. It continued to drop with increasing sharpness during the past 15 years of inflation at 0.9 percent per year during 1965-1979. It should be noted that the capital stock per worker dropped an average of almost 2.0 percent per year during 1977, 1978 and 1979, as business investments rose only slightly.¹⁶

Concomitant with inadequate investment in productive facilities has been the substitution of labor for risky and expensive new plants and equipment. The capital/labor ratio shrank when rising energy costs and environmental regulations made energy-using capital very expensive to operate. The response by business has been to utilize a readily available supply of relatively cheaper, but less productive, labor for technical advances.

Adjusting for cyclical business fluctuations, the United States has invested a stable 10 to 11 percent of

FIGURE III
TRENDS IN OUTPUT PER HOUR AND
CAPITAL/LABOR RATIO, 1948-1979
(Private Business Sector)
1967 = 100



Source: *Productivity Perspectives*, American Productivity Center, 1980.

GNP in capital stock between 1960 and 1978, while other countries have invested larger shares of their national output on capital formation. For the period 1960 to 1978, average fixed capital investment as a percent of gross domestic product (GDP) for Japan was 27.5 percent; West Germany, 19.4 percent; Italy, 16.3 percent; France, 19.2 percent; Canada, 19.7 percent; and the United Kingdom, 17.0 percent.¹⁷ The importance of investment spending as a percentage of GDP is shown in Figure IV which demonstrates the positive correlation between this measure and the annual increase in productivity among countries.

Technological Innovation

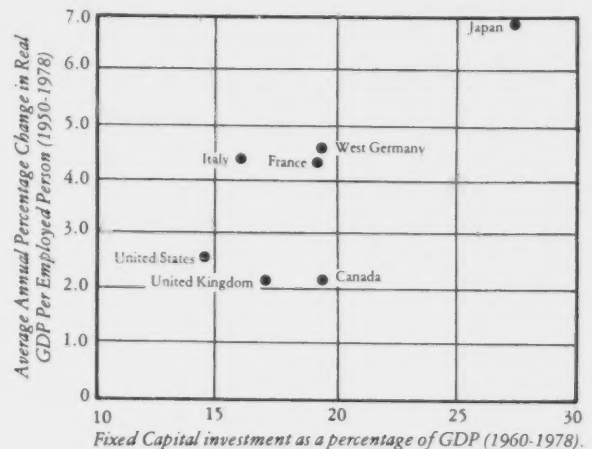
Researchers frequently cite advances in technological knowledge as the largest single factor accounting for productivity growth. Clearly, a positive correlation exists between industrial research and development outlays (R&D), growth of capital and economic development. Research and development is the primary source for advances in scientific and technical knowledge while

contributing to the introduction of new products for commercialization. It is principally through R&D expenditures that more efficient and less costly equipment is applied to production processes, thus contributing to long-term productivity growth.

A disturbing aspect of the United States economic decline is a slowing of R&D expenditures. Total research and development spending as a percent of GNP has declined from a high of 3 percent in 1964 to a low of 2.2 percent in 1978 (Figure V). From 1961 to 1967, total R&D outlays (in constant noninflated 1972 dollars) increased at the rate of 5.85 percent per year. The United States annual average declined to a scant 0.6 percent for the years 1968 through 1978. More important, American spending on R&D as a percentage of sales in such research intensive industries as machinery, professional and scientific instruments, chemicals, and aircraft had dropped by the mid-1970s to about half its level in the early 1960s.¹⁸ Projections from the National Science Foundation expect total R&D expenditures to rise 3 percent a year through 1985, although R&D spending as a share of GNP may decline to 2 percent.¹⁹ Since it takes approximately ten to fifteen years for an idea to develop into an application for improved productivity, the recent decline in R&D funds is likely to have lasting effects well into the 1980s.

FIGURE IV

INTERNATIONAL COMPARISON OF PRODUCTIVITY CHANGE¹ IN RELATION TO BUSINESS INVESTMENT



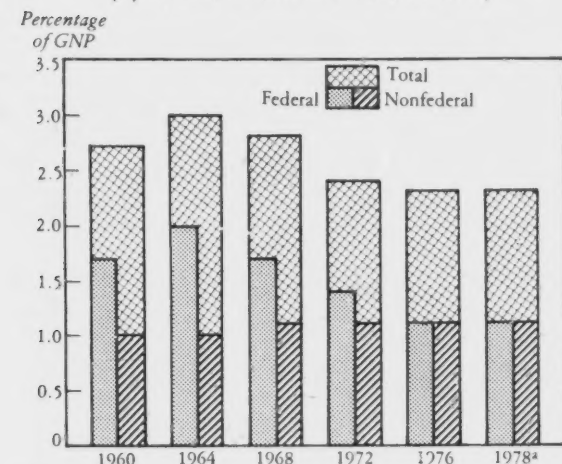
¹Change in gross domestic product per employed person, using country's own price weights.

Source: U.S. Bureau of Labor Statistics.

FIGURE V

NATIONAL R&D EXPENDITURES
AS PERCENTAGE OF GNP

(By Source, Selected Years, 1960-1978)



*Estimated

Source: National Science Foundation

A feature of modern American research and development expenditures is the emphasis placed on short-term applied technology rather than long-term basic research. Between 1960 and 1974, industry cut basic research funding in half from 8 percent to 4 percent where it remained through 1979.²⁰ During this period of high inflation and uncertainty, industry has intentionally directed R&D spending toward low-risk, small-scale projects providing fast dollar return. Conversely, there has been a reluctance to invest in more risky, fundamental technology with long-term payouts and greater opportunities for productivity growth. Compounding this trend is the encroachment of government regulations into R&D budgets. Determining methods to meet federal requirements has been a significant R&D cost since the technology needed to comply with government mandates has often been nonexistent.

While American expenditures for R&D have declined as a percent of GNP since the mid-1960s, comparative data show other nations increasing their R&D outlays. Both Japan and West Germany — leading nations in average annual productivity improvement — have devoted increasing shares of their gross national product to technological development. This international trend occurs at a time when foreign investors have received an increasing proportion of United States patents. In 1961, foreign inventors were issued 17 per-

cent of all American patent grants; by 1978 this figure increased to 38 percent. While these figures may not signal a decline in relative inventiveness, they may exert a long-term productivity decline upon the capability of United States industry to reap benefits from new inventions.²¹

Labor Force Characteristics

A commonly cited reason for lagging growth — although one hard to quantify in precise terms — is the emergence of new employee attitudes toward work. It is noted that since the counterculture movement of the mid-1960s there has been a deterioration in the work ethic characterized by lack of ingenuity, poor quality workmanship, rising absenteeism and turnover, and loss of motivation, although this is a controversial possible cause of declining productivity. Furthermore, a prevalent feeling of "me-ism" contributes to erosion of workplace discipline and rebellion against the establishment. These charges are leveled mainly against blue collar workers, although they are ascribed to white collar workers, including managers and professional employees, with increasing frequency. Negative attitudes are caused by a decline in the desire to improve one's standard of life and occupational position principally through rewards based on individual effort and achievement. In the affluent society, workers harbor the notion of entitlement fostered by feelings of social and economic equality.

Others argue that while work disenchantment exists, the cause is found in the *type* and *kind* of work available, not in working itself. With continually rising expectations, workers desire jobs that provide challenge and interest — jobs able to fulfill the personal needs of esteem, recognition, and growth. If the work ethic has declined, the answer is found in dull, repetitive jobs underutilizing the talents of an increasingly educated work force.

Economists agree that the economic decline has been caused, in part, by structural changes in the age-sex composition of the labor force. The age profile of the labor force changed considerably between 1966 and 1973 when the baby boom children of the 1940s and 1950s entered civilian employment. This disproportionately large influx of young workers was considered a drag on productivity because they possessed low levels of industrial skill and experience. This occurred during a period when older, more experienced men withdrew from working, partly because of early retirement. Combined with these counterproductive trends was the en-

trance of large numbers of women into the labor force. Handicapped by inexperience and by the lack of opportunity for upward occupational mobility, women tended to cluster into low paying, low productive jobs.

However, the age-sex composition of the work force stabilized during the years 1973 to 1979 and cannot be blamed for the 1979-1980 productivity decline. The number of young people entering the work force slowed considerably after 1973 while the entrants of 1966-1973 acquired the skills and experience needed to be productive. In fact, recent structural changes in the labor force were considered a plus for productivity growth in 1979 and 1980. During the decade of the 1980s, the work force will continue to age while the opportunities for women may improve, affording more productive jobs to this group.

Intersectoral Labor Shifts

National productivity figures are greatly affected by shifts of labor among different sectors of the business economy. This occurs largely because different industries or sectors have higher output rates than others. For example, a large factor in the 3.2 percent average annual economic growth of the United States between 1947 and 1967 was the movement of labor from agriculture — with its low levels of output per hour — to more productive occupations in manufacturing. This twenty-year intersectoral shift contributed an average of 0.5 percent a year to the economic growth rate of the economy as a whole.²² With only 0.5 percent of the work force in farming today, the shift out of agriculture has virtually stopped and, therefore, the present gains from this movement are largely negligible.

Productivity experts widely suggest that the slowdown in productivity growth is partly due to the structural shift in employment to the rapidly growing service sector. Over the past six years, more than 90 percent of employment growth has been in the service-producing organizations. Service organizations are alleged to lower national productivity growth due to the intangible nature of personal services and the labor intensity of service organizations. To date, the ability to substitute large quantities of capital for labor has not existed. Technology does play a role in service facilities but a relatively small one compared to its role in manufacturing.

It should be noted, however, that economists argue over the degree to which the service sector has contributed to economic decline. The arguments are based on two premises: First, the measurement of service

output is fraught with weaknesses and conceptual mistakes. Second, productivity measures evaluate output only and do not include the useful application of the services rendered. For example, productivity measures do not account for personal improvements in comfort, convenience, or time offered by service organizations. These measurement errors may well serve to exert a downward bias on the productivity of this sector. The Bureau of Labor Statistics estimates that the decline of economic growth due to the service sector has been small, accounting for less than 0.1 percent of the decline in overall productivity.²³

Government Regulations

Government regulations frequently develop when business neglects to fulfill socially desirable goals. Laws governing equal employment opportunity, occupational safety and health, and industrial pollution were passed because of genuine concern for human rights and a better society. However, today's productivity lag is attributed partly to the negative impact these government rules and regulations have on business operations. Business people complain of a poorly managed regulatory system complete with jurisdictional overlaps, complicated and overly detailed reporting procedures, overbearing federal regulators, and nitpicking standards. The proliferation of governmental mandates results in substantially increased business costs contributing to higher national inflation. The argument is made that compliance with government regulations has approached a direct tax that diverts funds from productive capital formation and R&D spending.

The cost to business of complying with governmental rules is easily shown, although "estimates of dollar outlays vary widely because there is no commonly accepted method of computing either the cost of regulation or the benefits achieved."²⁴ A 1977 study by the *Business Roundtable* showed that forty-eight companies spent a total of \$2.7 billion in order to comply with the regulations of six federal agencies. This amount was equivalent to 16 percent of net income (23 percent for the industrial firms) and 43 percent of R&D spending.²⁵ In 1978, all industries spent 4.5 percent of total capital expenditures for plant or equipment solely on pollution control. This was down from 5.1 percent in 1977 and 5.6 percent in 1976. Economist Murray L. Weidenbaum estimates that, on average, each dollar appropriated for government regulation imposes a twenty dollar additional cost on the business sector.

National Economic Growth

A substantial part of the recent slowdown in productivity growth is due to the decline in the rate of growth of real GNP. Table 2 illustrates the positive relationship between growing or declining gross national product and various characteristics of the economy. Of special significance is the correlation between declining growth rates for real GNP between recent periods (1973-1978 and 1978-1979) and lower total factor productivity and output per employee hour for these periods. The 1974-1975 recession sharply depressed output causing significant declines in productivity. A general economic tendency is for productivity to fall during contractions as capital utilization drops and employers, unsure of the seriousness of the decline, resist costly employment layoffs. If employment remains constant or rises, as it did in the 1973-1978 and 1978-1979 periods (Table 2), this only aggravates the downward trend of productivity growth.

Economists have traditionally noted that produc-

TABLE 2

DECLINING GROWTH RATES, 1948-1979 (Real GNP, National Income, Hours, Productivity, Employment, and Real Earnings)

Item	Average Annual Percent of Change		
	1948-73	1973-78	1978-79
Gross National Product	3.79	2.53	2.23
Employment	1.49	2.26	2.73
GNP per capita	2.30	1.73	1.42
GNP per employee	2.26	0.27	-0.43
National income per capita	2.18	1.36	
National income per hour worked	2.66	0.70	
Employment per capita	0.03	1.47	1.86
Hours worked per employee	-0.54	-0.55	3.2
Total-factor productivity (private domestic economy)	2.4	0.4	-0.5
Output per employee hour (private domestic economy)	3.0	1.0	-0.9
Real average hourly earnings	3.1	1.2	-1.7

Sources: Labor productivity: U.S. Bureau of Labor Statistics; National income data: E.F. Denison; Total factor productivity: American Productivity Center; Other series: *Economic Report of the President*: 1980; reported in *Productivity Perspectives*, American Productivity Center, 1980.

tivity growth is the force behind a noninflationary economy. That is, when productivity growth lags behind wage gains, inflation results as extra costs are added to the prices of goods and services. Recently, however, economists critical of the government's effect on productivity attribute the slowness in economic growth to high inflation caused by huge deficit spending. During the 1970s, federal government expenditures exceeded the tax base during both recession and recovery periods. With a limited money supply, government borrowing to repay the debt diverts funds needed for capital expansion and technological developments in the private sector. Furthermore, increases in the supply of money through the Federal Reserve System encourage inflation through a wage-price spiral, or vice versa, thus contributing to a self-fulfilling prophecy of rising inflation. Expectancies of inflation, in turn, distort investment spending, and the cycle deepens.

Any discussion linking productivity lags to gross national product and inflation must include the exceptional cost of energy. Higher energy costs have had, and will continue to have, a depressing effect on the productivity growth rate. The American Productivity Center describes the shock of energy costs on output this way:

The revolution in energy prices that began with the OPEC petroleum boycott in 1973 has exerted an impact on productivity in ways that are not yet fully understood, nor are they directly traceable in any of the macro-economic models on sources of growth and reasons for the slowdown. However, it is increasingly obvious that the revolution in energy prices and the absolute and increasing shortages of energy supply are not only causing a substitution of labor for capital and energy but are also disrupting the whole process of technical change in the economy. The rise of energy prices has made energy-using capital and technical change obsolete so that productivity growth is being held in abeyance until the technical change process can adjust to the new pattern of factor prices.²⁶

Other Causes

The six reasons discussed here as causing America's productivity problem are generally accepted by economists as the major underlying causes for the slowdown. The list is not all inclusive. The following are mentioned by others who have reviewed productivity lags.

- A continuing business-government-labor adversarial relationship.
- A decline in personal savings, which since World War II accounted for 65 percent of the nation's funds available for capital investment.

- A government system of tax codes that discourages investment.
- Deference to a market-driven strategy emphasizing marketing producible products rather than producing marketable products.²⁷
- Emphasis on short-term business profits buttressed by compensation systems, management-by-objective goals, and financial requirements for investment projects.

PRODUCTIVITY GROWTH IN THE 1980s

Projections for long-term productivity growth are both encouraging and disquieting. On the plus side, most economists expect a moderate recovery during the 1980s, but average annual growth rates are not expected to reach the 3.2 percent improvement rate achieved in the 1947-1967 period. Modest recovery rates "generally" fall between 1.5 percent and 2.5 percent. Table 3 shows six different projections for the ten-year period 1980-1990 based on labor productivity plus Kendrick's estimate based on total factor productivity. The lowest labor productivity rate is 0.9 percent forecasted by William Freund for the New York Stock Exchange; the high rate, 3.4 percent, is offered by Kendrick. Kendrick's rate is based on strong economic growth coupled with restraints in federal spending. The projected productivity growth rates listed in Table 3 are consistent with those of other productivity experts including Siegel, Thurow, and Dennison.²⁸

Forecasts for productivity gains in the United States are balanced among measurable influences affecting productivity growth plus assumptions assigned to less measured factors. Fortunately, some of the trends that slowed productivity growth in the 1970s may be temporary and self-correcting. Others, considered positive to productivity growth in the past, may have little or no effect on future growth rates. During the decade of the 1980s, the following are listed as potential contributors to productivity growth:

- Improvement in the capital/labor ratio as the labor force grows more slowly.
- A more experienced and skilled labor force.
- Advances in technological innovation embodied in new capital equipment.
- Improvements in managerial know-how and industrial practices.

Offsetting these gains, however, are:

- Continued expenditures to meet government standards including outlays for nonproductive investments for pollution control and for safety and health regulations.
- A continuation of the intersectoral shift from manufacturing to service.

TABLE 3

PROJECTIONS OF PRODUCTIVITY FOR PRIVATE BUSINESS ECONOMY, 1980-1990.

Source	Time Period	Projected Avg. Annual Percentage Change	Assumption
<i>Labor Productivity:</i> Output per hour			
Bureau of Labor Statistics	1980-85 1985-90	1.9 to 2.1 2.3 to 2.5	— —
Council of Economic Advisors	1980-82 1982-85	1.0 1.5 to 2.0	— —
Data Resources, Inc.	1979-85 1986-90 (1979-90)	1.5 1.9 1.7	— — —
Fortune Magazine (A. Greenspan)	1979-89	2.1	No economic upsets now evident
J.W. Kendrick	1980-90 1980-90	2.1 3.4	Basic scenario High-growth
New York Stock Exchange (William Freund)	1980-90 1980-90 1980-90	0.9 1.1 2.0	Low-investment Base case High-investment
<i>Total Factor Productivity</i>			
J.W. Kendrick	1980-90 1980-90	1.6 2.6	Basic scenario High-growth scenario

Source: U.S. Bureau of Labor Statistics, Data Resources, Inc., Fortune Inc., J.W. Kendrick, and New York Stock Exchange (Freund); reported in *Productivity Perspectives*, American Productivity Center, 1980.

- No further gains from farm-to-nonfarm occupations.
- A continuing rise in energy costs.

There is no general agreement on the exact quantitative effects of either the positive or negative factors.

SUMMARY AND CONCLUSION

The purpose of this article has been to review United States productivity trends and problems. Four major points can be drawn from this overview. Three of these points are readily deduced from the article; the fourth is more ambiguous and harder to discuss because of the controversies surrounding the issue.

The first prevalent feature of productivity is the critically important role it plays in the vitality of the United States. Strong productivity growth is a fundamental contributor to a rising standard of living, increased employment and higher real wages, strong

international competitiveness, reduced inflation, and improved business profits.

Second, largely due to the magnitude of the subject, productivity is an extremely complex topic. As a term, productivity is beset with misconceptions that confuse and often hinder policies to remedy the United States productivity problem. Furthermore, experts are not in agreement on how to measure productivity accurately or what to include in measurement statistics.

Third, the deterioration of United States productivity is now of national concern. Researchers have recently directed their attention to causes of the productivity decline. Study results list a gamut of depressants although six major causes are normally cited. These range from low capital spending and reduced R&D expenditures to worker attitudes and government regulations.

The fourth prominent point about productivity, and the one of immediate concern today, is what to do about the problem. However, it is in the area of correction that opinions diverge and even contradict one another. While experts may agree on methods to alleviate the problem, they may not agree on changes in public policy to achieve these goals. It is beyond the scope of this article to detail the numerous suggestions offered for improvements, but the following proposals are frequently heard.

Congress should formulate policies that would spur capital investment and R&D spending principally through revisions of current depreciation rules and liberalization of the investment tax credit. Closely allied with this suggestion are tax incentives to encourage personal savings in order to supply the resources necessary for capital formation. Additionally, government officials should reevaluate, and change when necessary, the myriad regulations adding to business costs. Where change is impossible, regulatory programs should be managed more efficiently and with less adversary and litigious intentions. Future and existing laws should be evaluated based on estimates of the costs and benefits to the public and business. Finally, experts agree on the need for federal budgetary constraints and improved monetary measures to curb inflation.

While these suggestions are valuable, it is important to recognize that economic improvements do not lend themselves to magical solutions. There are many determinants of productivity growth. The success of these prescriptions, and others, may well rest on the ability of policy makers, in cooperation with labor and management, to fashion a long-term, cohesive national policy for productivity growth. With the current attention to our productivity record, perhaps now is the time to formulate that national framework.

¹"The Reindustrialization of America," *Business Week*, June 30, 1980, p. 57.

²Arizona State University formed a productivity institute in 1975. The institute is actively engaged in collecting national and regional productivity data. Information about the center can be obtained by writing to the Productivity Institute, College of Business Administration, Arizona State University, Tempe, Arizona 85281.

³For an expanded definition of productivity, see William A. Ruch and James C. Herschauer, *Factors Affecting Worker Productivity*, Occasional Paper Number 10 (Bureau of Business and Economic Research, College of Business Administration, Arizona State University, 1974), Chapter 2.

⁴*Ibid.*, p. 10.

⁵*Productivity in the Changing World of the 1980s* (National Center for Productivity and Quality of Working Life, Washington, D.C., 1978), p. vi.

⁶William Bowen, "Ailing Productivity," *Fortune*, December 3, 1979, p. 68.

⁷*Ibid.*, p. 68.

⁸*Productivity Perspectives* (American Productivity Center, Houston, Texas, 1980), p. 9.

⁹Eli Shapiro, *Policies for Productivity Growth* (The American College, Bryn Mawr, Pennsylvania, 1979), pp. 7-8.

¹⁰*Productivity Perspectives*, Table A42, p. 60.

¹¹*Ibid.*, p. 36.

¹²*Ibid.*, p. 60.

¹³*The Future of Productivity* (National Center for Productivity and Quality of Working Life, Washington, D.C., 1977), p. 79.

¹⁴For an expanded treatment of Japanese productivity growth, see *Industrial Growth in Japan*, prepared by Marlene Shaughnessy, Information Services, American Productivity Center, Houston, Texas, September 1979.

¹⁵"Capital Investment in Perspective," *Economic Road Maps*, Nos. 1886-1887, The Conference Board (September 1980), p. 1. Outlays in constant (1972) prices.

¹⁶*Productivity Perspectives*, p. 29.

¹⁷"Capital Investment in Perspective," p. 4.

¹⁸Robert H. Hayes and William J. Abernathy, "Managing Our Way to Economic Decline," *Harvard Business Review* (July-August 1980), p. 69.

¹⁹*Productivity in the Changing World of the 1980s*, p. 27.

²⁰"Business Week's R&D Scoreboard: 1979," *Business Week*, July 7, 1980, pp. 47-48.

²¹*Productivity Perspectives*, p. 43.

²²*Productivity in the Changing World of the 1980s*, p. 19.

²³*Ibid.*, p. 19.

²⁴"The Reindustrialization of America," p. 66.

²⁵Statistics for this study were reported in *Business Week*, June 30, 1980, p. 66.

²⁶*Productivity Perspectives*, p. 31.

²⁷"Managing Our Way to Economic Decline," p. 71.

²⁸The projections of Siegel and Thurow are reported in "Policies for Productivity Growth," footnote 9. Dennison's estimates are from *A Summary of the Future of Productivity* (National Center for Productivity and Quality of Working Life, Washington, D.C., 1977), p. 3.

Productivity Improvement Through People

WILLIAM B. WERTHER, JR.

An important question facing business today is, What can individual managers and employees do about the productivity crisis? Since low productivity growth rates are a national problem, many people conclude that solutions must be national in scope. A review of the causes of the productivity dilemma listed in Table 1 appears to reinforce the idea that no one individual manager or employee can alter the course of current productivity trends. Each factor in the table seems to require government action or fundamental changes in our culture. Since these requirements are outside the scope of any one individual, managers and workers often feel absolved of any need for action.

Nevertheless, ongoing productivity gains have been achieved by individual workers, managers, firms, and industries in the United States. These gains represent only partial solutions to our national crisis, but the cumulative effect of these gains — if extended to more organizations — can alter the productivity of the nation.

Substantial productivity gains can be achieved through employee involvement in which nonmanagement employees are allowed to solve problems that affect their job performance, job setting, and the job itself.

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TABLE 1

COMMON CAUSES OF SLOW PRODUCTIVITY GROWTH

- Government regulations, taxes and high interest rates
- Few business and individual incentives
- Slow capital formation and outdated industrial base
- Insufficient research and development expenditures
- Poor attitudes toward work in the workforce
- Adversary labor-management attitudes and values
- Improper mix of skills among workers
- Large and growing service and government sectors
- Resource shortages and high energy prices
- Inflation
- Foreign competition

Source: Developed by the author.

Through employee involvement, companies such as Texas Instruments, IBM, Lockheed, Northrup, Control Data, Tektronix, General Motors, Beech Aircraft, Champion International, Solar Turbines, Bendix, and others have achieved substantial productivity gains.¹ Each of these companies has reported returns of 200, 300, and 400 percent from their investments involving employees in work place decisions.

EMPLOYEE INVOLVEMENT: THE CONCEPT

The key to successful employee involvement is allowing nonmanagement employees to solve prob-

lems that affect their job performance, job setting, and the job itself. Although management retains the authority to decide if employee ideas will be used, management challenges workers to uncover problems and make recommendations for improvement. The challenge may be focused on lowering costs, reducing defects, improving safety, increasing output; or it may be unfocused with the object of challenging the workers to find easier ways to do their job.

The challenge usually is delivered to the workers through training programs that teach employees how to be problem solvers. Training includes topics ranging from data collection and analysis techniques, to problem solving and presentation skills. Since employees are taught the need for analytical solutions that are justified by facts not feelings, recommendations to management are accompanied by businesslike justifications. Interestingly, demands for wage and benefit increases or other cost increases seldom arise from these groups unless accompanied by documentation and justification. Instead, solutions usually recommend changes that contribute to improved job performance.

As part of employee involvement, management usually allows employees time during work hours to apply these concepts — individually or in groups — to elements of the job and job setting that need improvement. Although management may suggest areas of consideration, employees are usually free to select the issues that interest them. When employees are free to select the work-related problems that concern them, they appear more interested in finding solutions. Since their solutions are achieved participatively, their commitment is higher and their resistance to the change is lower.

Problems with Involvement

If employee involvement benefits employers and workers, why has it not been used by more companies? Although the problem is very complex, the answer to this question lies partly in some fundamental assumptions and perspectives of many American managers.

Too often managers view their employees as less educated, less motivated, and less dedicated than themselves. Many managers assume their workers are apathetic and treat them accordingly. Feedback is often limited to discipline with too little recognition for good performance. Management reports are seldom widely shared with employees, and sometimes, not even with first level supervisors. Glossy stockholder reports go to investors who may be far removed from the workplace,

but employees may not know last week's productivity performance in their department. High scrap rates, absenteeism, and defective units are produced partly because many workers are not educated by management to be businessmen and businesswomen.

Another problem is the short perspective found among many managers and chief executive officers (CEOs). Unrelenting pressure is applied to achieve short-term goals, which for managers means meeting budgets, and for CEOs means ever increasing quarterly earnings per share growth. Short-run expedience is substituted for sound business judgment in such cases. A simple example illustrates the point: No manager would consider spending \$12,000 for a word processor without training the operator how to run the machine. Yet, even some supposedly well-managed firms promote workers into supervision without a single minute of supervisory training. A hearty handshake, a pat on the back, and an offer of help if needed constitute the typical orientation and training program for the elated, but often bewildered, new supervisor. Yet, this supervisor may manage a payroll of hundreds of thousands of dollars and workers who actually produce the firm's products or services.

An extension of the apathetic assumption and the short-run perspective also affects employee involvement efforts. Many top and middle managers are reluctant to make the necessary "investment" in supervisory and employee training programs that should precede a major employee involvement effort. For example, Solar Turbine, Inc. (a San Diego based subsidiary of International Harvester, Inc.) invested \$79,000 in its involvement program during the first eighteen months. This type of up-front investment is less clearly measured, however, than investments in plant, equipment, advertising, or other claimants on organizational budgets. Even when the "investment" in people is made, the rate of return is difficult to measure and is easily curtailed in times of high interest rates and limited budgets.

When top management is committed to employee involvement, concern is often expressed over the voluntary aspects of involvement programs. Voluntarism is another concept foreign to operating managers who believe their job is to solve problems and make decisions. Allowing employees the autonomy to select problems they wish to solve may be seen by managers as an abdication of their responsibility or even a threat to their authority. Often supervisors and middle managers require training to understand their role in the organization, which is not so much to make decisions or to

solve problems, but to get decisions made and problems solved.

Once managers accept their role as managers, not doers, the feelings of abdication and threat subside. They are then better able to turn their attention to the planning, organizing, directing, staffing, and controlling that are the core functions of management. In the managerial capacity, they remain responsible for meeting objectives. When pressing problems arise that employees do not wish to tackle or are unable to solve, managers must then intervene through delegation or hands-on activities. Although employee involvement means extensive participation by employees in problem-solving areas traditionally reserved for management, it does not mean an abdication of management's responsibility for results. Instead, it means sharing the need-satisfying aspects of work.

PRODUCTIVITY AND QUALITY OF WORK LIFE

Perhaps the major problem with employee involvement is that many managers do not see the connection between productivity and quality of work life. Yet, the main effect of employee involvement is to improve the employees' quality of work life; it makes the job and the employment relationship more satisfying. In turn, employee-initiated workplace improvements lead to increased productivity through increased commitment to the organization and its objectives.

The clearest connection between employee involvement and quality of work life is shown in the features of the ideal organization. Table 2 lists characteristics commonly identified by people when asked to describe an ideal organization. Firms that lack most or all of these

TABLE 2
CHARACTERISTICS OF
THE IDEAL CORPORATION

- Clear objectives
- Good communications and feelings of trust
- Meaningful work with challenge and variety
- Known role expectations
- Opportunities for recognition, autonomy, growth, and achievement
- Ample feedback on performance
- Capable leadership
- Fair treatment (including discipline and compensation)
- Success at meeting organizational objectives and employee needs

Source: Developed by the author based upon the in-class responses of more than 1,000 seminar participants.

characteristics do not provide a high quality of work life. People are frustrated, uncertain of what is expected. Outstanding performance is treated in a manner similar to acceptable performance. Top management may have motives for improvement, but employees see few reasons for improving their performance and productivity. Productivity gains, if any, come from new equipment, technological advances, or favorable economic circumstances. Even when productivity gains do accrue to the firm, they often are less than gains that might be expected from employees who experience high quality of work life and the commitment it implies.

Through increased employee involvement, however, employees are given opportunities to clarify objectives and role expectations. The process of participation leads to opportunities for recognition, autonomy, growth, achievement, and feedback. Involvement presents employees with new challenges that add variety to daily tasks. Improved communications lead to better rapport with management, which provides additional insights into leadership styles and performance expectations. People become more open and willing to find better ways of doing their jobs.

Japanese vs. American Approaches

Perhaps nowhere is the impact of employee involvement and quality of work life more evident than in the gains made by Japanese firms. The approach of major Japanese firms to employee involvement offers a useful contrast with American management practices. Some of the more noteworthy comparisons are highlighted in Table 3. These differences certainly are not the only reasons for Japan's post-World War II success. However, they do contribute to the well publicized work ethic of Japanese workers.²

TABLE 3
JAPANESE AND AMERICAN APPROACHES
TO EMPLOYEE RELATIONS

<i>Japan</i>	<i>United States</i>
1. "Lifetime employment"	No employment guarantees
2. Extensive pre-employment and post-employment orientation	Minimal new-employee orientation
3. Seek employee suggestions	Resist employee ideas
4. Emphasis on quality	Emphasis on costs
5. Decision making through participation and consensus	Decision making through reliance on authority

Source: Developed by the author.

Lifetime employment. Not all Japanese workers have lifetime employment. Most women, workers over age 55, and employees of small firms lack this level of employment security. However, the major Japanese employers — particularly those successful firms with which United States industry must compete — usually offer employment for life to their core work force of Japanese males.³

While American managers fear indolent workers as the result of lifetime employment, Japanese managers get high commitment and performance. Poor performers in Japan are subject to discipline by management and peer pressure. But those who wish to perform have the freedom to be creative. If production workers or supervisors can eliminate their job, the prospect is recognition, not the unemployment line. Job security is assured if the firm survives. This realization causes Japanese employees to see their personal success as intertwined with their employer's success. Perhaps this relationship is best illustrated by the observation of Kyonosuke Ibe, Chairman of Sumitomo Bank.

In Japan, when a worker is asked what he does for a living, he generally tells you he works for Sumitomo or Mitsubishi or Matsushita. It takes a second question to find out that he is a chauffeur, or engineer, or chemist, which, in my experience, is the first answer you get from an American.⁴

Although a policy of lifetime employment sounds abhorrent to most American managers, it is often an unstated but common reality. Few firms ever lay off workers with more than five years' seniority. Growth companies, like IBM, boast of not laying off a worker in over thirty-five years.⁵ Even the disastrous 1980 production year in the American automobile industry saw the vast majority of American automobile workers escaping layoffs. Perhaps a greater commitment to employee job security by American firms might be reciprocated by a stronger commitment of employees to the organization and its objectives.

Orientation. Most American employee orientation programs are postemployment sessions of a few hours to half a day. Then, too often, the employee is left exposed to sink or swim. Many Japanese firms, however, provide extensive preemployment education. These efforts go beyond even the use of job previews found in some American firms. The Japanese approach may involve several posthire, preemployment trips to the firm's facilities. Extensive company literature is given the worker before employment begins. Materials range from detailed accounts of the company's history to procedures manuals.⁶ When the employee does report for

work, it is often marked by an entrance ceremony followed by extensive orientation and training that continue throughout the worker's career.

Quality vs. costs. The emphasis on quality gives many Japanese firms a core value that serves as a template against which even low level decisions are evaluated.⁷ Although American firms seek quality too, their emphasis is often on cost effectiveness. The subtle communication received by workers from their supervisors is that cost effectiveness is the main concern. By contrast, Japanese managers expect the worker to be concerned with quality and not leave it to some distant quality control department. Often, each worker is expected to check the quality of previous steps in the production process. At Toyota, for example, production workers are allowed to halt the assembly line when defects are uncovered.

Employee suggestions. Since Japanese workers often identify closely with the employer, they often feel obligated to provide ideas and suggestions. Against the backdrop of employment security, ideas have little chance of creating a loss of job or status.⁸ Moreover, this ethic of seeking employee ideas is seen as a key part of the supervisor's role.

The contrast with American supervisors is often one of perspective. American managers evaluate new ideas in terms of net benefits to the organization. From the expected gains of the idea, the costs (financial and psychological) of the change are subtracted. The Oriental perspective is different. Japanese supervisors often take the view that all employee ideas should be implemented unless an obvious harm would result. Although many ideas may have little or no benefit, the implementation of even marginal ideas reinforces the employee's desire to provide other suggestions, which may lead to substantial improvements in productivity.

Consensus management. Beyond merely seeking employee suggestions, Japanese managers appear to value consensus among those affected by a decision.⁹ From a Western perspective, Japanese managers may appear indecisive and slow to make decisions. More accurately, these managers devote considerable time to participatively formulating a statement of the problem and exploring the alternatives. Although the process is initially time consuming, the result is a consensus among those affected by the decision. When the decision is made, its implementation encounters comparatively little resistance.

By contrast, American management styles seem to favor unilateral decision making — often in the name of accountability. While the formulation of the prob-

lem and exploration of alternatives move quickly, these managers usually expend considerable time and effort overcoming subsequent resistance to the change caused by the decision.

Whether the Japanese or American styles result in better or faster decisions is unclear. What is clear, however, is that employee commitment to decisions is apt to be higher under the Japanese approach. Furthermore, feelings of employee satisfaction, quality of work life, recognition, achievement, growth, and organizational loyalty are all likely to be higher.

The Cultural Barrier Myth

American managers often dismiss cross-cultural comparisons of management style as not appropriate in the United States work environment. They reason that the cultures and people are so vastly different that the use of Japanese techniques on American workers would be folly. Although systematic studies are unavailable, limited case evidence suggests that Japanese-inspired leadership styles are successful with American workers.

Sony, Sanyo, Honda, and Quasar have reported excellent results with their American facilities. In some cases, quality, productivity, costs, and employee satisfaction have been improved simultaneously, as happened at Quasar.

Although limited case evidence does not validate the universal applicability of Japanese approaches, their methods are compatible with the description of the ideal organization. Their techniques provide employees with high levels of security to meet basic needs; participation through employee involvement contributes to social need satisfactions; and the involvement creates opportunities for recognition, personal growth, achievement, and other potential motivators.

INVOLVEMENT TECHNIQUES: AN OVERVIEW

With a population approximately one-half of the United States, on a land mass the size of Montana, and with few natural resources, the Japanese leaders during the post-World War II era recognized the need for export earnings. To survive in the export markets they saw the need for high quality products. With human resources as the only apparent abundant commodity, this small island nation recognized the crucial role that people would (in fact, must) play in rebuilding Japan.

Quality Control Circles

Out of the necessities of their condition, Japanese firms developed internal cultures that prize coopera-

tion, teamwork, and employee participation. Although many involvement techniques are used in Japan, the most common formal approach is quality control circles.

Quality control circles are workplace teams composed of the immediate supervisor and subordinates. Circles are created voluntarily. Only if the supervisor wants to create one, and only if the employees agree to join, do circles occur in Japanese plants.

When a supervisor elects to form one, the supervisor receives training in group dynamics, meeting skills, and decision making. Employees also receive training in problem-solving and decision-making skills. Training usually includes explanations of brainstorming, Pareto analysis, cause and effect diagrams, check sheets, and other data gathering and analyzing tools.

Once the initial training phase is completed, employees and their supervisor meet for one hour per week on company time. During this meeting, the group (not management) identifies and selects work-related problems that it wishes to solve. Members use brainstorming, data gathering, and other techniques to uncover the causes of the problem objectively. Recommended solutions are presented to management, which retains the authority to decide on implementation. Then the group selects another problem and the process continues.

This approach, or variations of it, has been applied successfully in the United States. Companies such as Lockheed, General Motors, Northrup, Solar Turbines, RCA, Control Data, and others often report returns of 200, 300, and even 400 percent on their investments in quality circle programs. More striking than the financial benefits are the perceptions of managers and workers about improvements in absenteeism, employee turnover, satisfaction, attitude, and production.

Other Involvement Techniques

Even where quality circles are inappropriate or unwanted by management, other involvement techniques have proved helpful in improving both productivity and the quality of work life.

Team-building approaches that do not follow the rigid pattern of quality circles may achieve similar benefits. These approaches may vary the training content, structure, or voluntary nature of the group, when compared with quality circles, but the key similarity is a team spirit built through group training and problem-solving sessions.

Even suggestion systems have proved to be a useful involvement technique. Successful systems usually omit

the "suggestion box" and instead mandate employees and supervisors to discuss the suggestions of the employee. This discussion serves as an opportunity for improved communications (particularly feedback about the idea), involvement in refining the idea, growth, and recognition. American companies like Allen-Bradley, IBM, Beech Aircraft, Honeywell, and Phillips Petroleum are just a few of the firms that have effective suggestion programs.

PROGRAMS VERSUS A WAY OF LIFE

Interestingly, many employee involvement efforts are implemented for reasons other than improving productivity. Safety, employee satisfaction, and communication improvements are other common goals. But a common thread seems to run among the long-established and more successful employee involvement efforts. Most of the administrators avoid thinking of their approaches as programs. Instead, they view employee involvement activities as an ongoing way of life that seeks a high quality of working life for all employees.

This view moves these managers away from thinking in terms of a short duration quick fix to employee satisfaction. Instead, they seek to build a work force committed to the organization and an organization committed to a high quality work life.

Although these managers seldom discuss profitability or productivity, they often view these gains as by-products of a high quality work life. They realize that the path to their productivity goal is a cohesive and

goal-oriented worker even though short-run profits can be maximized through autocratic approaches, pressure for performance, forceful discipline, and fear. But like their Japanese counterparts, they prefer to build a high quality of work life environment, which leads to improved productivity and profitability in the long run.

PRODUCTIVITY AND MANAGERS: THE CONCLUSIONS

Productivity improvement — the increase of outputs relative to inputs — is the basis for improving the success of our organizations and the well-being of our society. As our once abundant resources are consumed, the ability of our nation's organizations to deliver more products and services will depend on how well our resource inputs can be converted to outputs that satisfy the needs of our nation and its people.

Like the Japanese after World War II, our most bountiful and important resource is the skill and creativity of our people — all our people. The United States can no longer afford to leave the challenge and creativity of work to management alone. Even the most competent and capable managers must seek the good ideas of their employees. Not only must managers make use of their employees' creativity, but they must also make work challenging if this country is to tap the potential wellspring of productivity every employee offers. What can individual managers do to improve the productivity of our nation? They can and must involve all their human resources in problem-solving and decision-making processes.

¹*How to Involve Employees in Productivity Improvement* (Houston: American Productivity Center, 1979), pp. 6/3-6/18, 9/1-9/4, 12/1-12/16.

²James D. Hodgson, *The Wondrous Working World of Japan* (Washington, D.C.: American Enterprise Institute, 1978).

³Peter F. Drucker, "The Price of Success: Japan Revisited," *Across the Board*, August, 1978, p. 30.

⁴Kyonosuke Ibe, "It Took the Japanese to Build Japan," *Business Week*, October 6, 1980, p. 17.

⁵"How IBM Avoids Layoffs Through Retraining," *Business*

Week, November 10, 1975, pp. 110, 112.

⁶Hiroshi Tanaka, "The Japanese Method of Preparing Today's Graduate to Become Tomorrow's Manager," *Personnel Journal*, February, 1980, pp. 109-112.

⁷Thomas J. Peters, "Putting Excellence into Management," *Business Week*, July 21, 1980, pp. 196-197, 200, 205.

⁸"Japanese Managers Tell How Their System Works," *Fortune*, November, 1977, p. 127.

⁹*Ibid.*, p. 130.

Productivity Measurement

WILLIAM A. RUCH

The problem of declining productivity is one of the most challenging problems facing the United States economy today. Many people are writing and discussing the problem, yet the few effective solutions that have been developed by industry or by academic researchers have been insufficient to keep the productivity growth rate from declining into the negative range. Judging from the volumes that have been written in recent years and the continued poor results, it is clear that more is written about productivity than is known about it.

Many fundamental causes for the decline in national productivity have been offered. Although the experts do not completely agree, it is clear that there is no one cause nor one cure. For individual firms, there are more programs, techniques, and treatments to improve productivity than there are drugs in a drug store. Each technique may be effective in some situations but ineffective or even damaging in others. The only way a firm can evaluate the effectiveness of its productivity improvement efforts — whatever techniques are used — is through a system of productivity measurement.

The primary purposes of productivity measurement are to audit the current productivity status of the firm

through comparison to other firms, to other divisions within the firm, or to industry averages; and to evaluate the effectiveness of productivity efforts by monitoring progress toward goals. Productivity measurement is not intended to improve productivity, although some firms have reported an improvement resulting from the process of developing and implementing a measurement system. Normally, however, measurement does not cause productivity improvement. Systematic progress toward productivity improvement objectives, however, is nearly impossible without some valid method of measurement.

PRODUCTIVITY DEFINITION

Many think of productivity as being a measure of labor, usually expressed as output per hour. Actually it is a much broader concept than that. Productivity is any output to input ratio. For the firm as a whole, outputs include all goods and services produced during a given time. Inputs include all resources consumed to produce those outputs. Labor is one of the input resources but so too are capital, material, and energy. Virtually all of the resources used by the firm fall in one of these four categories.

For this discussion, total firm productivity is defined as follows:

$$\text{Productivity} = \frac{\text{output}}{\text{input}} = \frac{\text{goods and services produced}}{\text{labor \& capital \& materials \& energy}}$$

The only way a firm can evaluate the effectiveness of its productivity improvement efforts is through a system of productivity measurement. This article discusses several partial productivity measures and describes in detail the system of total firm productivity measurement.

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Any measure which compares output to just one of the inputs, such as units per hour, is a partial productivity measure. Most of the common productivity measures used today are partial measures, although methods are being developed to measure the total productivity of the firm. There is nothing wrong with partial measures except that they do not show the total picture. Labor productivity, for example, could be vastly improved by being very ineffective and inefficient in the use of capital, energy and materials. Obviously, if the firm is to succeed, it must effectively manage all four resources.

COMMON PARTIAL PRODUCTIVITY MEASURES

Development of partial measures of productivity centers on issues of measuring outputs and on measuring each of the input factors.

Output Measures

Output should include all goods and services produced in a period independent of the amount actually sold and independent of changes in price. Rarely is this accomplished. Usually sales or sales deflated to constant dollars is used. The value of services such as delivery, set-up, maintenance, etc. should be included but often the accounting problems do not justify the last increment of accuracy.

Measurements of subunits of the firm such as purchasing, data processing, and personnel are difficult because of the lack of definable, measurable output units. Often, the system measures *activities* such as purchase orders written, programs compiled or interviews conducted rather than measuring true *results*. Until the solution to this measurement problem is found, suboptimization is likely to occur. For example, if programmers are measured by the number of lines written, operators can easily pad the program with unnecessary lines; they are working to maximize the measure but their activities are counterproductive to the organization.

Common measures of output for the firm or for subunits of the firm include:

- Sales
- Sales in constant dollars
- Units (such as cars, books, hamburgers, etc.)
- Customers served
- Aggregate common unit
- Value added

An aggregate common unit could take many forms. In many industries "tons shipped" is a reasonable

measure of volume of output, although significant changes in product mix could be a problem. In some industries, such as petroleum refining, different outputs may be converted to a common physical measure like BTUs of energy. A similar technique is to define all outputs relative to one basic unit of output. A fast food restaurant, for example, could define the hamburger as the basic unit. Each cheeseburger could be counted as 1.2 hamburgers, a double-decker as 1.75 hamburgers, and so on.

"Value added" is the sales revenue of a firm less all costs of raw material. For example, suppose a firm buys lumber and makes cabinets. The true output of this firm could be defined as the value that it adds to the material in the chain of processing from the forest to the consumer.

In the discussion of the inputs below, any of these measures of output could be combined with any of the input measures.

Labor Productivity

Common measures of labor productivity include:

- Output per hour
- Output per employee
- Output per labor cost (payroll)
- Output per constant labor cost

Output per hour and per employee have the advantage of being unrelated to changes in wage rates. They will differ, of course, with the use of overtime and part-time employees. Labor cost may be direct wages only or it may include all fringes and benefits. Constant labor cost involves deflating wage increases by multiplying hours currently worked by a base year wage rate.

Capital Productivity

Common measures of capital productivity include:

- Output per dollar invested
- Output per dollar consumed
- Output per machine hour

Each of these measures contains drawbacks. Output per dollar invested is subject to differences in the way capital is valued and depreciated. Also, recent investments cause the denominator to rise immediately while the effect in increased output may come much later. Output per dollar consumed involves spreading the cost of an asset over its useful life and charging off this cost as the asset is used. Output per machine hour is a useful measure, but frequent changes in technology disrupt the continuity of the measure.

Material Productivity

Common measures of material productivity include:

- Output per unit
- Output per dollar
- Output per constant dollar

Output per unit (such as cars produced per ton of steel purchased) is closely related to measures of scrap and waste. If 4 percent of the material is scrap, then 96 percent must have become part of the output. Productivity measures, however, are expressed as a unit to unit ratio rather than as a percentage utilization. The dollar value of all purchases can be used as material input, but if changes in material costs are to be deflated, units of material used can be multiplied by a base year price to obtain constant dollar cost.

It should be noted that if value added is used as an output measure, material productivity becomes meaningless.

Energy Productivity

Common measures of energy productivity include:

- Output per unit
- Output per cost
- Output per constant cost
- Output per aggregate common unit

The unit of energy may be kilowatt hour, barrel of heating oil, cubic foot of gas or any other physical unit. Cost is rarely used today because of the great fluctuations in unit energy cost, but constant cost may be used. Aggregate common units for energy would involve converting various sources of energy to some common physical unit such as BTUs.

The importance of energy is leading many firms to place a higher priority on monitoring and improving energy usage.

Summary of Partial Measures

Considering all the different output and input combinations that could be derived, there are literally hundreds of partial productivity measures that could be developed. Obviously not all are applicable to every firm. The set of partial measures used should reflect the importance of the resource to the firm and its ability to control or manage that resource; and, wherever possible, it should utilize existing data in the firm and fit with the accounting and other information systems in the organization.

If the firm does not have a sophisticated management information system and is just beginning to measure productivity, it should start simple and let the set of measures gradually be refined over time. For example, the firm could start with labor measures like sales per employee, meals served per dollar of labor cost, or tons shipped per direct labor hour. Similar output to input measures could be chosen for other input factors (capital, material, and energy). As pointed out, each of these measures is imperfect, but as employees become accustomed to using the measures, refinements such as deflating prices and costs to constant dollars can be added.

For the firm capable of handling a more sophisticated measurement system, the recently developed total firm productivity measurement system, described in the following section, combines all four input factors into a set of change ratios which measures productivity and its effect on the profitability of the firm.

TOTAL FIRM PRODUCTIVITY MEASUREMENT

Perhaps the most comprehensive measurement of firm productivity is a system developed by the American Productivity Center of Houston, Texas.¹ The system is based on the following assumptions:

- Output can be measured by sales.
- Inputs can be measured by costs.
- Profit is the difference between sales and costs.
- Profitability can be defined and measured as the ratio of sales to costs.
- Sales can be broken down into quantities sold (of perhaps many different items) times their respective prices.
- Costs can be broken down into quantities (such as hours of labor, units of materials, dollars of capital, kilowatt hours of energy) times their respective unit costs.
- The profitability ratio of sales to costs can thus be converted to a ratio of output quantities times prices in the numerator to input quantities times unit costs in the denominator.
- This ratio can be converted into the product of two ratios: the first is a ratio of output quantities to input quantities, the second is a ratio of output prices to input unit costs.

These relationships are illustrated in the following equation:

$$\begin{aligned}\text{Profitability} &= \frac{\text{Sales}}{\text{Costs}} \\ &= \frac{\text{Output Quantities} \times \text{Prices}}{\text{Input Quantities} \times \text{Unit Costs}} \\ &= \frac{\text{Output Quantities}}{\text{Input Quantities}} \times \frac{\text{Prices}}{\text{Unit Costs}}\end{aligned}$$

The first of these two ratios, output quantity over input quantity, is productivity. It is an output to input ratio in terms of units rather than prices, and it tells the amount of resources consumed to produce the firm's output. (Appropriate inventory change figures can be factored in to adjust for differences between sales and production.)

The second ratio, output prices over input unit costs, is price recovery. Changes in this ratio over time indicate whether changes in input costs are absorbed, passed on, or over-compensated for in the prices of the firm's output. A change ratio of less than one means the firm is helping to reduce inflation while greater than one would indicate a contribution to increasing inflation.

The equation can be restated (in English) as:

$$\text{Profitability} = \text{Productivity} \times \text{Price Recovery}$$

In these terms, a change in profit from one period to the next must be explained by a change in productivity, a change in price recovery, or a combination of the two. In other words, there are only two ways a firm can increase profit next period: it can produce more output per unit of input consumed or it can raise its prices faster than its suppliers are raising theirs.

The computations involved in this measurement system are relatively simple. Quantities of outputs and inputs from each year are multiplied by base-year prices to derive the productivity change ratio. Prices and unit costs for each year are multiplied by current year quantities to yield a price recovery change ratio. Unit costs for labor, materials, and energy are straightforward. The cost for capital is computed as the total of depreciation plus profit relative to the total assets employed. Capital costs for the second year, therefore, would be actual second year depreciation plus base year return on assets times current assets employed. In other words, profit for the second year is calculated as if the firm had been just as profitable relative to its assets as it was in the first year. Differences between this calculated profit

figure and the actual profit in the second year (over or under) is the figure that results from changes in the productivity or the price recovery of the firm.

An example will serve to illustrate the results obtained. Table 1 contains the basic data needed to compute the ratios. Note that from period one to period two the two outputs have changed in amount, in product mix, and in price. Similarly, labor, capital, materials, and energy have undergone changes. Careful analysis of this table could reveal some problems (30 percent wage increases for example) but it is not immediately obvious whether the input factors are more or less productive in the second period.

The output and the first three inputs are straightforward accounting calculations of value determined by the quantity sold or used multiplied by its price or unit cost. The capital input deserves additional explanation.

In period one, \$300,000 of capital assets yielded \$15,000 in depreciation for an average depreciation rate of 5 percent. This is the first component of capital cost. The second component is the profit that was earned in period one (\$18,800). This profit is weighed against total capital made up of \$300,000 in fixed assets and \$100,000 of working capital such as inventories or accounts receivable. Together, depreciation and profit make up the charge for capital use during period one, and the return on assets of 4.7 percent serves as a price to be paid per dollar of capital employed.

In period two, depreciation remains the same (no changes in fixed assets occurred). Working capital, however, increased so the return-on-assets figure from period one is applied to the new total assets figure to yield \$20,210. This is the profit that should have been made if the firm had maintained its profitability relative to assets. Actual profit in period two was only \$15,540² so the firm fell short by \$4,670. Apparently the firm is less successful, but the reasons for the decline must be sorted out of the data.

To understand the next table, begin by calculating a base period weighted labor productivity change ratio. Labor productivity in period one (the base period) would be:

$$L1 = \frac{(1000) (\$50) + (200) (\$200)}{(4000) (\$6.00) + (1000) (\$8.00)} = 2.81$$

For period two, weight the quantities of outputs and inputs using base period prices and costs. This freezes the dollar figures and removes the effects of inflation.

TABLE 1
BASIC DATA FOR TOTAL FIRM PRODUCTIVITY MEASUREMENT

	Period 1			Period 2		
	Value	Quantity	Price	Value	Quantity	Price
Output						
Product A (Chairs)	\$50,000	1,000	\$ 50	\$ 66,000	1,200	\$ 55
Product B (Tables)	\$40,000	200	\$200	\$ 33,600	160	\$210
Total Output	\$90,000			\$ 99,600		
Input						
Materials						
M-1 (Wood)	\$20,000	20,000	\$ 1.00	\$ 25,200	21,000	\$ 1.20
M-2 (Varnish)	\$ 1,000	100	\$ 10.00	\$ 1,200	100	\$ 12.00
M-3 (Nails)	\$ 200	200	\$ 1.00	\$ 160	148	\$ 1.08
	\$21,200			\$ 26,560		
Labor						
L-1 (Woodworker)	\$24,000	4,000	\$ 6.00	\$ 30,400	3,800	\$ 8.00
L-2 (Finishers)	\$ 8,000	1,000	\$ 8.00	\$ 8,320	800	\$ 10.40
	\$32,000			\$ 38,720		
Energy	\$ 3,000	30,000	\$ 0.10	\$ 3,780	27,000	\$ 0.14
Capital						
Depreciation	\$15,000	300,000	0.050	\$ 15,000	300,000	\$ 0.050
Return	\$18,800	400,000	0.047	\$ 20,210	430,000	\$ 0.047
	\$33,800			\$ 35,210		
Total Input	\$90,000			\$104,270		
Deviation				<4,670 >		

Source: Developed by the American Productivity Center.

$$L_2 = \frac{(1200)(\$50) + (160)(\$200)}{(3800)(\$6.00) + (800)(\$8.00)} = 3.15$$

The change ratio for labor productivity is:

$$\frac{L_2}{L_1} = \frac{3.15}{2.81} (100) = 112\%$$

From period one to period two, labor productivity increased by 12 percent. This reflects a change in both input and output mix, but removes the confounding effects of inflation.

Similar calculations could be performed to yield a productivity ratio for each input factor and one for total output relative to the total of all inputs, that is total productivity. But why stop there? If quantities can be weighted by price, prices can also be weighted by quantity.³ The result would be a series of price recovery ratios. The price recovery ratio for labor, for example, would show how fast prices of the firms outputs had increased relative to increases in the wage rates of labor. Finally, the productivity change ratio and the price recovery change ratio could be multiplied to find the effect on profitability of each input factor. A complete set of these change ratios is contained in Table 2.

TABLE 2
TOTAL FIRM PERFORMANCE MEASUREMENT

	Value		Performance Indexes		
	Period 1	Period 2	Profitability	Productivity	Price Recovery
Output					
Product A	50,000	66,000			
Product B	40,000	33,600			
Total	90,000	99,600			
Input					
Materials	21,200	26,560	88.3	97.8	90.3
Labor	32,000	38,720	91.5	112.0	81.6
Energy	3,000	3,780	87.8	113.6	77.3
Capital	33,800	35,210	106.2	98.1	108.3
Total	90,000	104,270	95.5	103.1	92.7

Source: Developed by the American Productivity Center.

The 12 percent increase in labor productivity indicates more chairs and tables were produced by the workers, but the price recovery ratio of 81.6 percent reflects wage rate increases far greater than output price increases. In this example, the wage increases overshadowed the productivity increase and the net effect of

labor on the profitability of the firm was 91.5 percent, a drop of 8.5 percent from the base period. The problem for this firm appears to be at the negotiation table rather than on the factory floor.

Similar interpretations can be made on each of the other input factors. Energy, for example, was used much more productively; but, as one might expect, energy costs per unit rose much faster than did the firm's prices. The net effect of energy on profitability was 87.8 percent; however, in this example energy is the smallest of the inputs in terms of dollar value. Additional insight can be gained, therefore, by converting the percentages into dollar effects on profit. The result is the data in Table 3.

TABLE 3
EFFECTS OF PRODUCTIVITY AND
PRICE RECOVERY ON PROFIT

	Value		Effect on Profit		
	Period 1	Period 2	Profit-ability	Productivity	Price Recovery
Output					
Product A	50,000	66,000			
Product B	40,000	33,600			
Total	90,000	99,600			
Input					
Materials	21,200	26,560	<3.099>	<477>	<2,622>
Labor	32,000	38,720	<3.307>	3,511	<6,818>
Energy	3,000	3,780	<460>	367	<827>
Capital	33,800	35,210	2,196	<658>	2,854
Total	90,000	104,270	<4,670>	2,743	<7,413>

Source: Developed by the American Productivity Center.

Tables 2 and 3 indicate that overall the firm was 3.1 percent more productive which would have earned \$2,743 more in profit. Increasing unit costs of inputs, however, relative to price increases gave the firm a price recovery ratio of 92.7 percent which, by itself, would have lowered profit by \$7,413. The combined effect is profitability of 95.5 percent representing \$4,670 less in profit than would have been earned if the firm had maintained parity in all performance measures for period two.

At this point the firm has a good picture of the source of its profitability. If profitability is up, then it

can determine if the increase is due to better resource utilization (productivity) or to better cost control and pricing policies. In some cases, a firm may have declining productivity but be able to raise prices enough to pass its inefficiencies on to the customer. Thus it looks successful because it is profitable, but the inefficiencies in resource utilization will eventually cause the firm to fall when it meets competition — foreign or domestic — that can manage productivity. A firm with increasing productivity can absorb higher input costs and hold the line or even reduce output prices while continuing to make a substantial profit.

The two total measures of productivity and price recovery give a good overall evaluation of the success of the firm — far better than profit or return on assets alone. In addition, the eight factor ratios begin to explain resource utilization, pricing policies, and cost control in a way that permits the firm to focus efforts where the true problems lie and to evaluate the tradeoffs and other complexities of major changes. The system is not perfect, by any means. It does provide a perspective of firm performance, however, that has not been available through conventional evaluation techniques.

CONCLUSIONS

In order to improve productivity, a firm needs a productivity measurement system. Improvement effort without measurement is shooting in the dark. The system should measure utilization, not just inflation. Wherever possible, measures should be divorced from the confounding effects of changes in prices and costs. The measurement system should identify problems (do we have a problem?), isolate problems (where or what is the problem?) and lead to corrective action (what can we do about it?). It should monitor progress and permit the evaluation of past efforts to improve productivity.

The measurement system that approaches these goals will likely be a series or family of measures, some total productivity measures of firm performance to tell if a problem exists and some partial measures to suggest areas for improvement efforts. Finally, the measurement system for a firm most likely will be unique in some respects. In the final analysis, the characteristics of the firm will dictate the specific nature of the outputs and inputs to be measured.

¹For further information on this performance measurement system, contact the Measurement Department, American Productivity Center, 123 N. Post Oak Lane, Houston, Texas 77024.

²Actual profit is not shown in this format, but it can be calculated as the difference between revenue and total costs of the inputs.

³Mathematical logic demands that if quantities are base period price weighted, prices must be current period quantity weighted so that the product of productivity and price recovery yield the desired effect on profit.

Doctoral Dissertation Abstracts

COLLEGE OF BUSINESS ADMINISTRATION
ARIZONA STATE UNIVERSITY

Editor's Note: Our readers are often interested in research undertaken by doctoral candidates in the College of Business Administration at Arizona State University. Therefore, we occasionally include one or two abstracts of doctoral dissertations in Arizona Business. Readers who wish further information on any of these subjects may examine the complete dissertations in the ASU Hayden Library.

THE IMPACT OF INDUSTRIAL STRUCTURE ON LABOR FORCE PARTICIPATION RATES IN NINE WESTERN STATES

Ronald Andrew Madsen

The focus of this study is on examining how differences in industrial structure affect selected sex-age groups' labor force participation rates. Earlier research studies have analyzed differences in industrial structure by measuring expected employment opportunities that were sex, sex-age, and sex-industry specific. This study extends the approaches used in the earlier studies by analyzing: (1) the impact on given sex-age groups' labor force participation rates of expected employment opportunities that are sex-age-industry specific; (2) the impact of the expected employment opportunities for all other age groups of the same sex on the labor force participation rates of given sex-age groups; and (3) the impact of the expected employment opportunities of members of the opposite sex on the labor force participation rates of given sex-age groups. The research utilized multiple linear regression techniques to analyze cross-sectional county specific 1970 census data for nine western states. The regression results led to the following conclusions:

- Differences in industrial structure, measured by expected employment opportunities, were important determinants of the labor force participation rates of the different sex-age groups.
- The impact of industrial structure on the participation of a given sex-age group depended importantly on the industry in which the employment opportunities were expected to exist.
- The participation rates of the two prime-age groups (25 to 44 years and 45 to 64 years) of each sex were more frequently affected by industry specific expected employment opportunities than were the participation rates of other age groups.
- It was not possible to precisely separate the "age" or "other age" specific impact on participation rates of expected employment opportunities in a given industry for a given sex.
- The results strongly indicate that the labor force participation rates of both males and females were more responsive to the employment opportunities expected for their own sex than to the employment opportunities expected for the opposite sex.

Ronald Andrew Madsen is Assistant Professor of Economics at the University of North Carolina, Charlotte, North Carolina. The chairman of his dissertation committee was Dr. Paul Burgess, Associate Professor of Economics.

PROCEDURES USED BY FIRMS IN SIX MANUFACTURING INDUSTRIES
TO SELECT FOREIGN VENDORS

Robert A. Kemp

A review of literature concerning purchasing revealed a need for empirical research of the procedures used to buy foreign resources for use in domestic manufacturing operations. The investigation used six manufacturing industries and two purchase class situations. The industries were: chemicals, metals, fabricators, machinery, electrical, and transportation. The six industries buy about 47.4 percent of materials and capital equipment used for manufacturing in the United States, and make about 50.2 percent (dollar value) of the shipments of manufactured goods in the country. The two purchase classes were raw materials and parts or components.

A two-phased mail questionnaire was used to collect data. Phase one collected data concerning the use of foreign sources from 745 firms. Of these firms, 495 used foreign sources and were used in phase two. The phase-two data included responses from 385 firms. The respondents provided data concerning: (1) the reasons for using foreign sources, (2) the importance of factors used in the vendor-selection process, (3) the number of factors used in the vendor-selection system, (4) the methods and information systems used to qualify foreign vendors, and (5) the level of use of foreign sources over two time frames, pre-1973 to 1976 and 1976 to 1981.

The major results were:

(1) The level-of-use of foreign sources has increased between pre-1973 and 1976. Moreover, it will continue to increase into 1981.

(2) The use of foreign sources is not primarily attributable to the size of the firm.

(3) The most cited reasons for using foreign sources were those concerning price of materials and the continuity of supply.

(4) The response rates to four reasons identified meaningful differences between the six industries concerning: (a) the availability of materials or technology only from foreign sources, and (b) the ability of foreign suppliers to support other foreign operations of the firm.

(5) The importance values for the vendor-selection factors divided the industries into two groups based on the purchase class. The first industrial group, chemicals, metals, and fabricators, gave higher average-importance values to the factors for raw materials. The second group, machinery, electrical, and transportation, gave the higher-importance values to the factors for the parts and components purchase class.

(6) The number of vendor-selection factors used by the firms suggest that considerable emphasis is placed on the pre-selection vendor-evaluation process for foreign vendors.

The results of this research should be useful to three categories of firms: (1) those firms that currently utilize foreign sources, (2) those firms that are considering foreign suppliers, and (3) the foreign vendors. Purchasing managers that currently use foreign sources may use the dissertation to evaluate the ongoing purchasing process. Similarly, the dissertation includes a seven-step process for establishing the foreign vendor-selection process by firms not now using foreign sources. Finally, the dissertation provides useful data for the foreign vendor seeking to enter markets in the United States. In each case, managers should find the situational nature of the data an important asset as the guidance is used by a specific firm.

Robert A. Kemp is Director of Business and Communications, Phillips University, Enid, Oklahoma. The chairman of his dissertation committee was Dr. Harold Fearon, Professor of Management.

The Arizona Business Scene



The Show Low, Lakeside, Pinetop Area



Show Low, Lakeside, and Pinetop, three northern Arizona towns, are located in proximity to each other in southeastern Navajo County. This area is only about 175 miles northeast of Phoenix, but its climate, vegetation, and topography are worlds apart from that of Phoenix and Tucson. Southeastern Navajo County is situated in the midst of a national forest, at a mountain elevation of 6,400 to 7,200 feet. The area is 20 to 30 degrees cooler than Phoenix year round, and receives more precipitation than the desert areas. Summers are cool, showers are frequent, and snow is common in the winter. The result of this climate is a green area of pine and oak trees, studded with lakes and streams. The topography is hilly with the steep Mogollon Rim just to the south and the high peaks of the White Mountains a short distance to the east.

Pinetop and Lakeside are about three miles apart, while Show Low lies about ten miles to the northwest, but growth of the area is rapidly merging the three towns along the main highway connecting them. Climate and topography have made the area into a tourism and recreation center. The large Fort Apache Indian Reservation just south of the towns has done much to stimulate the growth of the area, with the development of lakes, camping areas, and a major winter sports area on its land. Recreational activities, both on the reservation and in the general area, include camping, fishing, horseback riding, hunting, and snow skiing.

When the area was first settled in the 1880s, its major industries were ranching and timber operations. In the past twenty years, however, the emphasis has switched to retail trade and services in response to the tourists and recreation seekers visiting the area. The result is that all three towns have grown rapidly.

In addition to the permanent population, shown in Table 1, southeastern Navajo County has a large number of part-time residents. Many people in the Phoenix and Tucson metropolitan areas have built second homes in the area, particularly around Pinetop, where there are a number of housing developments around country clubs or other recreational facilities. Thus, during certain times of the year the area's population may be far in excess of the figures in Table 1.

TABLE 1
POPULATION

City	1970	1980
Show Low	2,129	4,301
Pinetop	NA*	1,527
Lakeside	NA*	1,336

*Not available; both Pinetop and Lakeside are unincorporated towns.

Source: U.S. Department of Commerce, Bureau of the Census.

Most people in the area now find employment in the retail trade and the service sectors: approximately

40 percent and 30 percent respectively of the labor force. In Pinetop and Lakeside most of the trade and service employment is related to tourism and recreation, including such businesses as motels, restaurants, and automotive services. According to information gathered by the Bureau of Business and Economic Research in the ASU College of Business Administration, Navajo County as a whole attracts nearly two million tourists a year who spend approximately \$70 million a year in the county; the southeastern part of the county accounts for a large portion of those tourists and their expenditures.

Show Low has become more than a tourism and recreation center, for its location along both U.S. Highway 60 and State Highway 260 has helped it become a regional trade and services center as well. One of Show Low's important economic sectors is wholesale trade, particularly oil, lumber, concrete, and bottled gas.

Since the area is growing rapidly, between 5 and 10 percent of the labor force is involved in construction. In Show Low the value of construction has been approximately \$1.9 million in each of the last two years. Approximately 160 new housing starts were made in that town during these two years, but the climate makes construction employment heavily seasonal.

The transportation, communication, and public utility sector and the finance, insurance, and real estate sector each employ between 5 and 10 percent of the labor force of the area. Relatively large real estate employment has resulted from a statewide interest in the area's potential. Most of the manufacturing in the area is related to timber processing with two large

sawmills located nearby. Less than 5 percent of the labor force is engaged in manufacturing, a much smaller percentage than in the state as a whole.

The agricultural sector now plays only a very minor role in the economy, except for timber production. Mining is also minimal. The National Forest Service provides some employment in the area, but relatively few other government positions are available.

Most of the necessary major facilities and services are available in the area. Medical facilities are available in Show Low, as is higher education through a branch of Northland Pioneer College. Numerous churches and community facilities are located throughout the area; communication media are represented locally by newspapers, radio stations, and by cable television from Tucson and Phoenix. The area's transportation needs are served by local airlines, which use Show Low airport; by the Apache Railroad, which links the area with the transcontinental railroad located about fifty miles north; by truck lines; and by a bus line.

Continued growth in the area is expected, as the number of part-time residents increases and as recreation and tourism continue. This growth will likely include increases in permanent population, construction activity, and services and facilities. Increases can also be expected to occur in the employment base, and in nearly every other economic facet of the area. The employment and economic structure will likely continue to be different from that of the urbanized areas of Arizona. These differences, as well as the inherent climatological and topographical differences, will continue to contrast southeastern Navajo County with the major urbanized desert areas of the state.

A Survey of Arizona Business Conditions

HAROLD FEARON

Following December's slight downturn, the Arizona economy resumed its upward movement in January, according to results from the monthly business survey of the Purchasing Management Association of Arizona. All indicators of economic activity turned positive again, with new orders received showing a good gain. The slight reversal that occurred in December, following the gains of August through November, evidently was only a temporary pause and not indicative of the beginning of a long-term downtrend. However, prices still are escalating at a high rate, and this in combination with the very high interest rates probably will cause sluggish economic growth at least through the end of the first quarter.

The purchasing business survey now is in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Dr. Fearon is Professor of Management in the College of Business Administration, Arizona State University.

Prices paid for major purchased items went up in January, at a substantially higher rate than in December and the highest rate since last April. Sixty-six percent of the purchasing managers reported they paid higher prices in January than in December; 31 percent saw prices unchanged; only 3 percent said prices declined. While the rate of price increases did show signs of moderating during the summer months, this slight relief in upward price pressures was short lived, and prices now again are increasing at an alarming rate. It is doubtful if much relief will be experienced before the beginning of summer.

Delivery time on shipments from vendors continued to stretch out, and at about the same rate as in each month during the fourth quarter. Longer delivery times were reported by 27 percent of the firms; 10 percent said they received faster service from their suppliers. While delivery times have been positive for the past six months, the increases have been marginal and far under those experienced during a normal economic upswing, showing that the recovery has not developed any real momentum.

Inventory levels of purchased materials increased in January, reversing December's slight drop. Inventory additions were reported by 31 percent of the firms, which was slightly larger than the 25 percent who reported a reduction in stocks. No major changes in inventory levels have been reported over the past five months, and the tight rein being held on stocks by Arizona firms was a major factor preventing the recent recession from becoming a really serious problem. The

current high interest rates will cause Arizona firms to keep very close controls on inventory investment.

New orders received from customers increased, reversing December's downturn which was the first since signs of an economic recovery became evident last August. Thirty-three percent of the firms booked more new business in January than in December, compared to only 22 percent who experienced a shrinkage of their order books. The December drop may have been a reflection of the holiday month, since there has been a fall in the new order rate in December in each of the past several years.

Production also turned up again in January, after the one-month December drop. Higher production was reported by 28 percent of the firms, slightly more than the 24 percent who cut output.

Employment was up, continuing the increase trend which began in September and has followed each month since, with the exception of a slight interruption in December, which saw employment unchanged. Twenty-two percent added to their work force; 17 percent pared payrolls. The employment increases over the past five months have been far lower than normally experienced during an upswing.

Thus, the new year has started off on a positive note, although the increases on all indicators, except prices paid, were moderate. A continuation of only marginal growth is likely over the next several months, until both interest and price increase rates begin to fall.

The results of the January purchasing survey are shown in Table 1.

TABLE 1
JANUARY PURCHASING SURVEY

Key Indicator	Percent of Purchasing Managers Indicating Each Response (January compared to December)		
	Higher	Same	Lower
Prices paid for major commodities	66	31	3
Delivery time from vendors	27	63	10
Purchased materials inventory level	31	44	25
New orders received	33	45	22
Production	28	48	24
Employment	22	61	17

Source: Survey of the Purchasing Management Association of Arizona.

ARIZONA SALES OF ELECTRICAL POWER By Months in Millions of KWH*

Current Month:	Actual:		Percent Change Current Month From	
	1980	1979	Same Month/ Prev. Year	Previous Month
December	2275.5	2177.4	4.31	+ 8.05

* Based on reports from major suppliers.

DECEMBER, 1980

Arizona Building Permits: Monthly Report

	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE COUNTY	6	75,000	2	57,000	—	—	—	—	8	132,000
Eagar	—	—	1	57,000	—	—	—	—	1	57,000
St. Johns	3	N/C	—	—	—	—	—	—	3	—
Springerville	1	N/C	1	N/C	—	—	—	—	2	—
Unincorporated Apache County	2	75,000	—	—	—	—	—	—	2	75,000
COCHISE COUNTY	79	1,951,340	5	117,400	2	128,212	81	163,106	167	2,360,058
Benson	11	263,450	—	—	—	—	4	2,968	15	266,418
Bisbee	6	17,700	—	—	—	—	1	8,000	7	25,700
Douglas	7	281,318	—	—	—	—	10	20,126	17	301,444
Huachuca City	1	55,800	—	—	—	—	—	—	1	55,800
Sierra Vista	21	420,372	2	30,400	—	—	42	83,353	65	534,125
Tombstone	1	1,000	—	—	—	—	15	10,750	16	11,750
Unincorporated Cochise County	28	849,200	1	15,000	1	99,212	8	36,909	38	1,000,321
Willcox	4	82,500	2	72,000	1	29,000	1	1,000	8	184,500
COCONINO COUNTY	93	2,830,905	8	3,793,919	2	110,242	41	1,063,773	144	7,798,839
Flagstaff	33	1,828,801	6	440,112	2	110,242	23	1,049,093	64	3,428,248
Fredonia	2	1,500	—	—	—	—	1	500	3	2,000
Page	8	49,697	1	93,875	—	—	13	10,500	22	154,072
Unincorporated Coconino County	46	927,807	1	3,259,932	—	—	—	—	47	4,187,739
Williams	4	23,100	—	—	—	—	4	3,680	8	26,780
GILA COUNTY	39	474,736	2	34,902	—	—	18	69,372	59	579,010
Globe	3	52,200	—	—	—	—	1	3,000	4	55,200
Havden	—	—	—	—	—	—	—	—	—	—
Miami	2	1,400	—	—	—	—	—	—	2	1,400
Payson	14	99,184	2	34,902	—	—	16	20,372	32	154,458
Unincorporated Gila County	20	321,952	—	—	—	—	1	46,000	21	367,952
GRAHAM COUNTY	38	739,184	3	223,200	—	—	1	15,000	42	977,384
Pima	—	—	—	—	—	—	—	—	—	—
Safford	9	214,600	1	170,000	—	—	1	15,000	11	399,600
Thatcher	5	7,000	—	—	—	—	—	—	5	7,000
Unincorporated Graham County	24	517,584	2	53,200	—	—	—	—	26	570,784
GREENLEE COUNTY	—	—	—	—	—	—	—	—	—	—
Clifton	—	—	—	—	—	—	—	—	—	—
Duncan	—	—	—	—	—	—	—	—	—	—
Unincorporated Greenlee County	—	—	—	—	—	—	—	—	—	—
MARICOPA COUNTY	1,862	47,257,583	113	33,711,903	37	9,760,052	1,523	32,743,141	3,535	123,472,679
Avondale	5	67,364	—	—	—	—	8	14,416	13	81,780
Buckeye	7	20,800	1	5,500	—	—	1	2,000	9	28,300
Chandler	294	9,248,432	3	147,000	3	2,203,195	287	399,020	587	11,997,647
El Mirage	4	24,826	—	—	—	—	—	—	4	24,826
Gila Bend	—	—	—	—	—	—	2	2,300	2	2,300
Gilbert	6	304,520	1	96,000	1	1,500	15	26,261	23	428,281
Glendale	85	1,969,200	14	2,485,300	—	—	123	375,227	222	4,829,727
Goodyear	—	—	1	110,000	—	—	6	84,495	7	194,495
Guadalupe	1	4,800	—	—	—	—	—	—	1	4,800
Mesa	121	4,011,538	10	2,454,850	2	3,245,000	259	1,216,325	392	10,927,713
Paradise Valley	21	1,601,438	—	—	—	—	21	455,689	42	2,057,127
Peoria	40	704,900	—	—	—	—	41	64,125	81	769,025
Phoenix	519	14,190,429	38	21,872,985	16	1,926,157	474	12,734,755	1,047	50,724,326
Scottsdale	123	5,853,974	6	2,280,898	—	—	147	1,107,832	276	9,242,704
Surprise	4	41,160	—	—	—	—	2	2,100	6	43,260
Tempe	62	1,054,500	20	2,250,300	15	2,384,200	27	704,800	124	6,393,600
Tolleson	6	61,470	—	—	—	—	—	—	6	61,470
Unincorporated Maricopa County	544	7,951,105	18	1,561,270	—	—	103	15,504,296	665	25,016,671
Wickenburg	2	100,000	—	—	—	—	2	26,500	4	126,500
Youngtown	18	47,127	1	448,000	—	—	5	23,000	24	518,127

Arizona Building Permits: Monthly Report (Continued)

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE COUNTY	249	4,527,014	20	4,070,069	—	—	200	284,386	469	8,881,469
Kingman City	27	1,291,202	4	6,120	—	—	6	4,840	37	1,302,162
Kingman Area	39	362,708	—	—	—	—	34	31,280	73	393,988
Lake Havasu City	46	1,266,725	9	3,505,504	—	—	6	38,350	61	4,810,579
Lake Havasu Area	1	10,976	—	—	—	—	4	6,576	5	17,552
Mohave Valley North	80	986,748	5	506,688	—	—	86	109,218	171	1,602,654
Mohave Valley South	39	457,830	2	51,757	—	—	51	76,254	92	585,841
Dolan Springs	2	23,456	—	—	—	—	1	6,480	3	29,936
Sacramento Valley	15	127,369	—	—	—	—	12	11,388	27	138,757
Mohave County General	—	—	—	—	—	—	—	—	—	—
NAVAJO COUNTY	57	552,209	—	—	—	—	10	20,142	47	552,351
Holbrook	4	10,600	—	—	—	—	1	1,000	5	11,600
Show Low	—	—	—	—	—	—	4	3,650	4	3,650
Snowflake	1	N/C	—	—	—	—	—	—	1	—
Taylor	2	1,800	—	—	—	—	—	—	2	1,800
Unincorporated Navajo County	25	485,309	—	—	—	—	4	14,892	29	500,201
Winslow	5	34,500	—	—	—	—	1	600	6	35,100
PIMA COUNTY	785	16,787,121	35	7,782,460	2	144,000	401	4,089,277	1,223	28,802,858
Marana	3	N/C	1	N/C	—	—	—	—	4	—
Oro Valley	3	25,500	—	—	—	—	—	—	3	25,500
South Tucson	11	65,570	4	2,025	—	—	—	—	15	67,595
Tucson	261	4,915,721	18	4,733,135	1	42,000	186	2,917,717	466	12,608,573
Unincorporated Pima County	507	11,780,330	12	3,047,300	1	102,000	215	1,171,560	735	16,101,190
PINAL COUNTY	99	770,622	6	436,600	—	—	36	537,230	141	1,744,452
Casa Grande	5	138,201	3	241,600	—	—	1	7,150	9	386,951
Coolidge	18	23,706	—	—	—	—	1	450,000	19	473,706
Eloy	1	12,000	1	130,000	—	—	6	8,882	8	150,882
Florence	2	1,900	1	10,000	—	—	4	4,549	7	16,449
Kearny	3	11,500	—	—	—	—	—	—	3	11,500
Mammoth	7	64,000	—	—	—	—	—	—	7	64,000
Superior	—	—	—	—	—	—	1	2,000	1	2,000
Unincorporated Pinal County	63	519,315	1	55,000	—	—	23	64,649	87	638,964
SANTA CRUZ COUNTY	18	872,950	—	—	—	—	5	18,721	23	891,671
Nogales	5	199,862	—	—	—	—	2	6,500	7	206,362
Paragonia	—	—	—	—	—	—	1	50	1	50
Unincorporated Santa Cruz County	13	673,088	—	—	—	—	2	12,171	15	685,259
YAVAPAI COUNTY	181	4,018,948	15	1,161,580	5	12,502,500	58	615,181	259	18,298,209
Chino Valley	11	143,200	—	—	—	—	3	2,000	14	145,200
Clarkdale	2	29,300	—	—	—	—	1	300	3	29,600
Cottonwood	10	55,510	3	130,000	—	—	4	79,620	17	265,130
Jerome	1	400	1	1,200	—	—	—	—	2	1,600
Prescott	34	741,062	5	612,150	—	—	32	78,585	71	1,431,797
Unincorporated Yavapai County	108	2,742,616	5	363,700	5	12,502,500	17	424,676	135	16,033,492
Prescott Valley	15	306,860	1	54,530	—	—	1	30,000	17	391,390
YUMA COUNTY	159	2,753,836	8	507,609	1	23,475	34	559,765	202	3,844,685
Parker	13	480,300	—	—	—	—	6	86,400	19	566,700
Somerton	4	117,300	—	—	—	—	—	—	4	117,300
Unincorporated Yuma County	124	1,706,988	6	256,635	—	—	17	338,677	147	2,302,300
Wellton	—	—	—	—	—	—	—	—	—	—
Yuma	18	449,248	2	250,974	1	23,475	11	134,688	32	858,385
TOTAL Maricopa County,										
December, 1980	1,862	47,257,583	113	33,711,903	37	9,760,052	1,523	32,743,141	3,535	123,472,679
TOTAL Maricopa County,										
December, 1979	1,673	33,248,577	115	60,955,163	26	13,362,979	1,390	10,343,631	3,204	117,910,350
PERCENT CHANGE	11	42	-2	-45	42	-27	10	217	10	5
TOTAL Arizona,										
December, 1980	3,645	83,591,448	217	51,896,642	49	22,668,481	2,408	40,179,094	6,319	198,335,665
TOTAL Arizona,										
December, 1979	3,810	67,147,006	204	77,828,332	29	13,554,942	2,009	17,105,577	6,052	175,635,857
PERCENT CHANGE	-4	24	6	-33	69	67	20	135	4	13

* Includes mobile homes.

N/R: No report.

N/C: Not collected.

Arizona New Housing Starts: Monthly Report

DECEMBER, 1980

BUILDING PERMITS ISSUED						BUILDING PERMITS ISSUED					
	1*	3-4	5 or	Housing			1*	3-4	5 or	Housing	
	Family	Duplex	Families	More	Units		Family	Duplex	Families	More	Units
APACHE COUNTY	4	—	—	—	4	MOHAVE COUNTY	156	—	—	8	222
Eagar	—	—	—	—	—	Kingman City	19	—	—	—	19
St. Johns	1	—	—	—	1	Kingman Area	26	—	—	—	26
Springerville	1	—	—	—	1	Lake Havasu City	33	—	—	6	89
Uninc. Apache Co.	2	—	—	—	2	Lake Havasu Area	1	—	—	—	1
COCHISE COUNTY	59	—	—	—	59	Mohave Valley North	44	—	—	2	54
Benson	8	—	—	—	8	Mohave Valley South	23	—	—	—	23
Bisbee	—	—	—	—	—	Dolan Springs	1	—	—	—	1
Douglas	6	—	—	—	6	Sacramento Valley	9	—	—	—	9
Huachuca City	1	—	—	—	1	Mohave Co. General	—	—	—	—	—
Sierra Vista	14	—	—	—	14	NAVAJO COUNTY	26	—	—	—	26
Tombstone	—	—	—	—	—	Holbrook	—	—	—	—	—
Uninc. Cochise Co.	26	—	—	—	26	Show Low	—	—	—	—	—
Willcox	4	—	—	—	4	Snowflake	1	—	—	—	1
COCONINO COUNTY	65	1	2	3	156	Taylor	1	—	—	—	1
Flagstaff	26	1	2	2	45	Uninc. Navajo Co.	21	—	—	—	21
Fredonia	—	—	—	—	—	Winslow	3	—	—	—	3
Page	3	—	—	—	3	PIMA COUNTY	513	3	8	4	643
Uninc. Coconino Co.	35	—	—	1	107	Marana	2	—	—	—	2
Williams	1	—	—	—	1	Oro Valley	—	—	—	—	—
GILA COUNTY	20	—	—	—	20	South Tucson	2	—	—	—	2
Globe	1	—	—	—	1	Tucson	160	3	8	3	274
Hayden	—	—	—	—	—	Uninc. Pima Co.	349	—	—	1	365
Miami	—	—	—	—	—	PINAL COUNTY	44	2	3	—	60
Payson	4	—	—	—	4	Casa Grande	1	—	2	—	9
Uninc. Gila Co.	15	—	—	—	15	Coolidge	—	1	—	—	2
GRAHAM COUNTY	24	—	—	—	24	Eloy	1	—	—	—	1
Pima	—	—	—	—	—	Florence	—	—	—	—	—
Safford	5	—	—	—	5	Kearny	—	—	—	—	—
Thatcher	—	—	—	—	—	Mammoth	5	—	—	—	5
Uninc. Graham Co.	19	—	—	—	19	Superior	—	—	—	—	—
GREENLEE COUNTY	—	—	—	—	—	Uninc. Pinal Co.	37	1	1	—	43
Clifton	—	—	—	—	—	SANTA CRUZ COUNTY	15	1	—	—	17
Duncan	—	—	—	—	—	Nogales	4	—	—	—	4
Uninc. Greenlee Co.	—	—	—	—	—	Patagonia	—	—	—	—	—
MARICOPA COUNTY	1,186	15	18	16	1,916	Uninc. Santa Cruz Co.	11	1	—	—	13
Avondale	5	—	—	—	5	YAVAPAI COUNTY	118	—	7	—	144
Buckeye	1	—	—	—	1	Chino Valley	4	—	—	—	4
Chandler	272	—	3	—	281	Clarkdale	2	—	—	—	2
El Mirage	1	—	—	—	1	Cottonwood	3	—	2	—	9
Gila Bend	—	—	—	—	—	Jerome	—	—	—	—	—
Gilbert	2	—	1	—	6	Prescott	11	—	3	—	23
Glendale	66	—	—	—	66	Uninc. Yavapai Co.	87	—	1	—	91
Goodyear	—	—	—	—	—	Prescott Valley	11	—	1	—	15
Guadalupe	—	—	—	—	—	YUMA COUNTY	100	—	1	1	110
Mesa	84	8	4	1	132	Parker	12	—	—	—	12
Paradise Valley	10	—	—	—	10	Somerton	3	—	—	—	3
Peoria	29	—	—	—	29	Uninc. Yuma Co.	76	—	—	1	82
Phoenix	245	5	6	5	781	Wellton	—	—	—	—	—
Scottsdale	91	2	—	4	127	Yuma	9	—	1	—	13
Surprise	3	—	—	—	3	TOTAL, Maricopa Co.	1,186	15	18	16	1,916
Tempe	20	—	3	6	113	December, 1980	1,186	15	18	16	1,916
Tolleson	2	—	—	—	2	TOTAL, Maricopa Co.	987	6	7	14	1,932
Uninc. Maricopa Co.	353	—	1	—	357	December, 1979	987	6	7	14	1,932
Wickenburg	2	—	—	—	2	PERCENT CHANGE	20.	150.	157.	14.	-1.
Youngtown	—	—	—	—	—	TOTAL, Arizona	2,330	22	39	32	3,401
						December, 1980	2,330	22	39	32	3,401
						TOTAL, Arizona	2,193	18	18	23	3,387
						December, 1979	2,193	18	18	23	3,387
						PERCENT CHANGE	6.	22.	117.	39.	0.

*Includes mobile homes.

N/R: No Report.

N/C: Not collected.

Retail Food Prices

JANUARY, 1981

Retail food prices in Maricopa County rose 1.2 percent in January, following a 1.4 percent gain in December. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The January index of 258.7 indicates that shoppers would now have to pay \$25.87 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$23.17 one year ago. The January, 1981 index reflects an 11.7 percent increase over the January, 1980 value.

The increase in this month's index was due to a gain in all but one of the subgroups. *Fruits and Vegetables* rose 2.7 percent, followed by *Cereals and Bakery Products* (2.4 percent), *Other Foods* (2.3 percent), and *Dairy Products* (0.5 percent). These gains were partially offset by a slight drop in *Meats, Poultry, Fish, and Eggs* (-0.8 percent).

Soaring prices for tomatoes (up 30.4 percent) and potatoes (22.3 percent) contributed to the overall gain in *Fruits and Vegetables*. Increases were also posted for apples (2.8 percent) and lettuce (2.6 percent). Partially counteracting these gains were falling prices for oranges (-21.4 percent) and bananas (-8.5 percent).

Prices were up this month in almost all categories of *Cereals and Bakery Products*. Largest increases were noted for fresh cake and cupcakes (6.2 percent, followed by flour and prepared flour mixes (5.1 percent).

Climbing prices for rice pushed the category of rice, macaroni, and cornmeal up 3.7 percent, while cereal rose 3.4 percent.

Carbonated drinks (excluding nondietary cola) advanced 9.3 percent in January, contributing to the gain in *Other Foods*. The cost of sugar and artificial sweeteners is still on the upswing, increasing 6.0 percent. Also rising were prices for nuts, potato chips, and other snacks (4.5 percent). Roasted coffee prices, down 1.2 percent, fell for the fourth consecutive month.

Prices for most items in the *Dairy Products* subgroup rose slightly or were unchanged this month, resulting in a small overall gain. Ice cream and related products increased 2.3 percent, followed by a 1.0 percent rise in fresh milk (other than whole milk) and cream.

The drop in *Meats, Poultry, Fish, and Eggs* was this subgroup's first decline since May, 1980, and was the result of lower prices in several categories. Most notable were price reductions for eggs (-6.7 percent), fresh whole chicken (-6.2 percent), noncanned ham (-6.0 percent), and pork chops (-4.0 percent). Partially offsetting these decreases were higher prices for lunchmeats other than bologna, liverwurst, and salami (8.8 percent), followed by sausage and bacon.

A comparison of October, 1980 Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a foodstuffs group in October, 1980 (obtainable for an outlay of \$10.00 at 1967 average prices) were \$25.02 in Maricopa County; \$25.80 in Los Angeles-Long Beach; \$26.20 in San Francisco-Oakland; \$26.20 in Chicago-Northwestern Indiana; and averaged \$26.00 in the United States.

TABLE 1
INDEX FOR FOOD CONSUMED AT HOME
Maricopa County, United States, and Selected Metropolitan Areas
(Average 1967 = 100 percent)

Group	Maricopa County Jan '81 ^a	Maricopa County Oct '80 ^b	United States Oct '80	Los Angeles- Long Beach Oct '80	San Francisco- Oakland Oct '80	Chicago- Northwestern Indiana Oct '80
Food Consumed at Home	258.7	250.2	260.0	258.0	262.0	262.0
Cereals and Bakery Products	243.5	234.6	253.7	266.7	259.4	258.9
Meats, Poultry, Fish, and Eggs	262.4	258.3	252.6	250.6	259.8	259.3
Dairy Products	226.7	217.1	232.7	227.9	229.3	226.6
Fruits and Vegetables	243.3	236.6	254.2	243.9	247.7	254.4
Other Foods Consumed at Home	290.2	276.8	312.2	305.4	319.4	317.5

^a Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

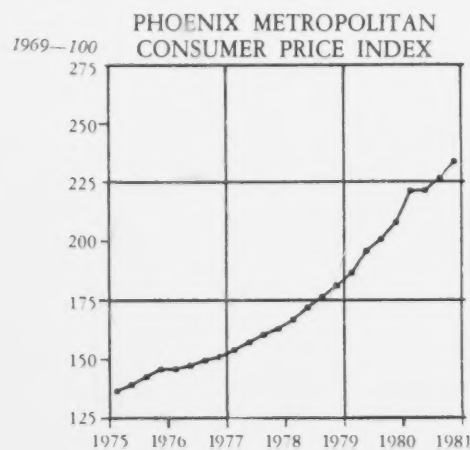
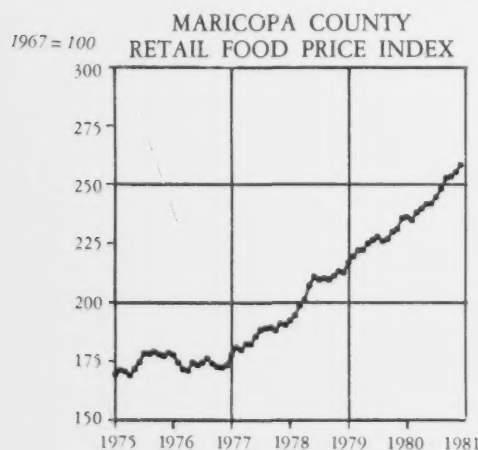
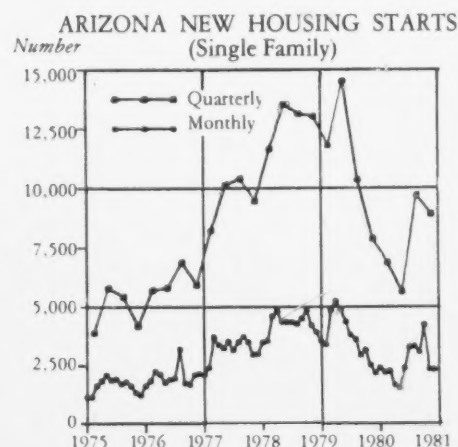
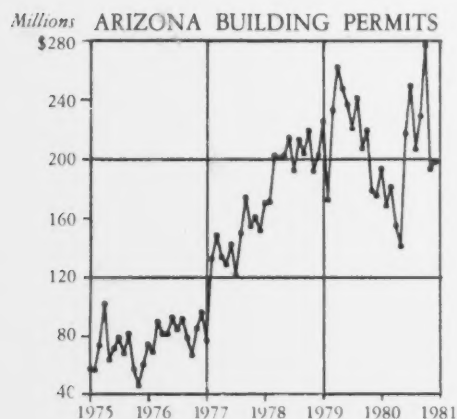
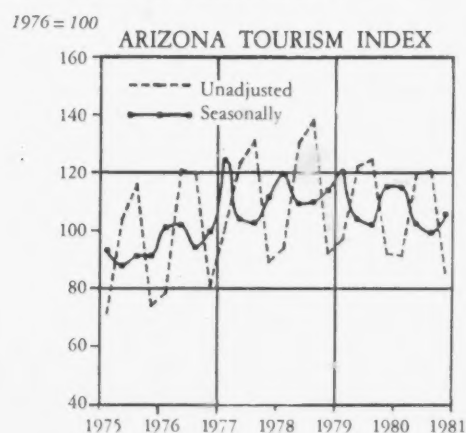
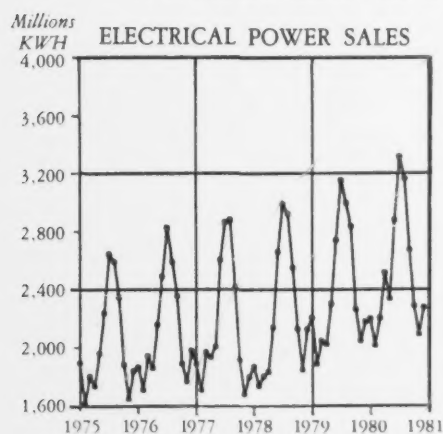
^b Maricopa County food prices are reported for the month closest to publication.

^c Comparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index Comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indices cannot be used to determine the actual differences in food price levels between the regions.

Sources: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Arizona Economic Indicators

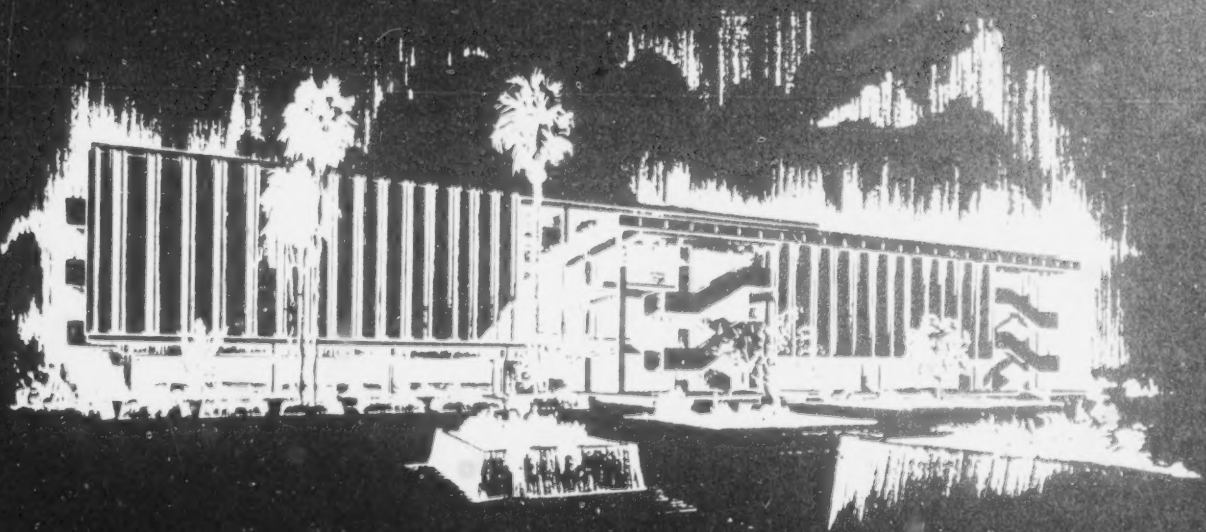


Source: All data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

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March 1981

ARIZONA BUSINESS

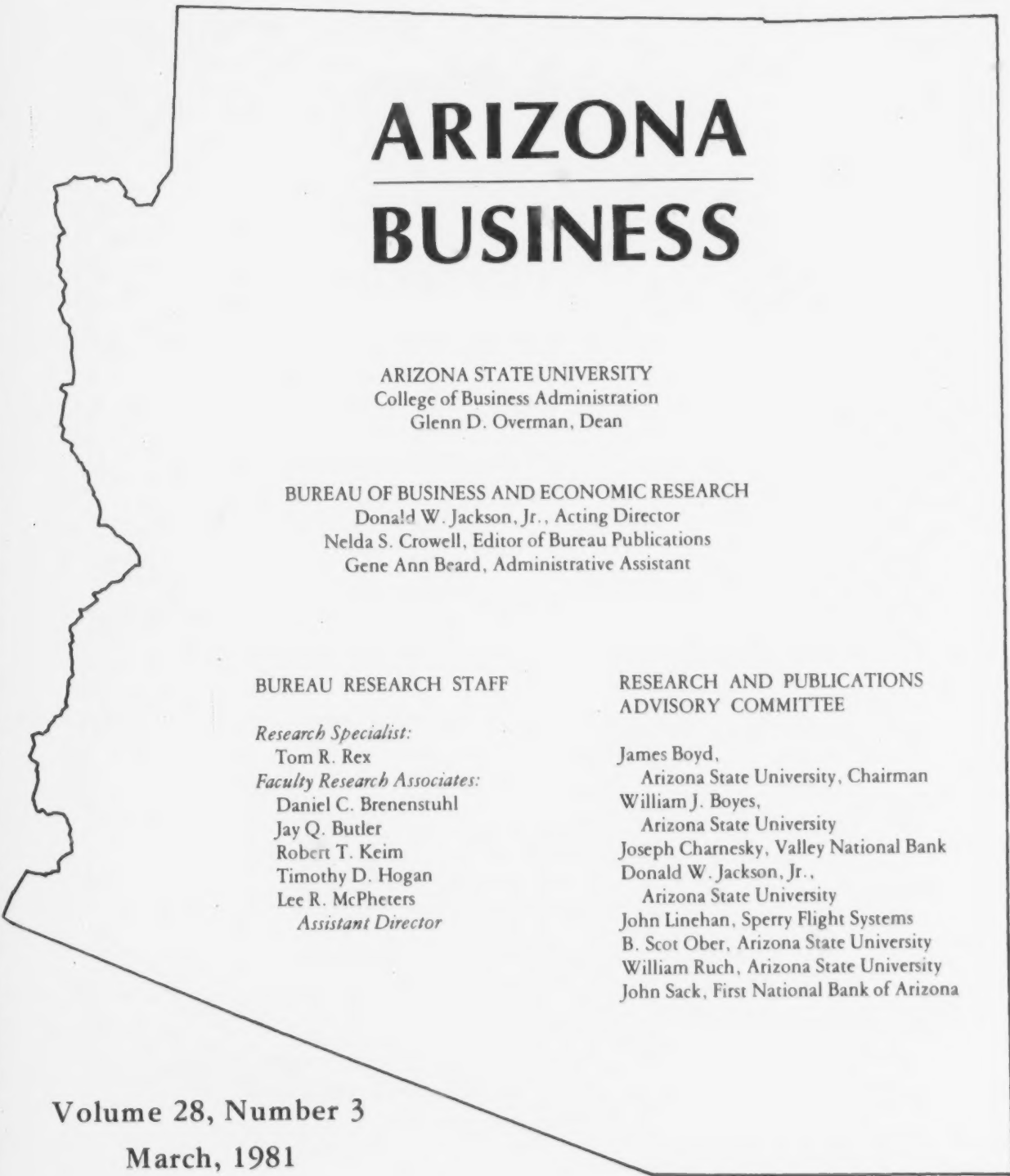


1980 in Review:
Consumer Prices, Food, Construction, Tourism

Bureau of Business and Economic Research
College of Business Administration
Arizona State University

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Report To The Reader

As expected, 1980 was a year of economic belt-tightening. This issue of *Arizona Business* presents the year-end review of four major studies done throughout the year by the Bureau of Business and Economic Research in the College of Business Administration, Arizona State University.

The most alarming news is the Consumer Price Index, which rose an average of 15.2 percent during the year. Food prices were up 9.5 percent, and number of residential housing permits dropped a dramatic 27 percent. Tourism expenditures are up, but only 12 percent compared to 18 percent in 1979, putting the 1980 increase below the inflation rate. Furthermore, the number of airline tourists dropped by 7.1 percent.

Nevertheless, a few bright spots persisted during the year. Even though the Consumer Price Index rose at a record rate, the largest increase occurred in housing, which means that people who did not buy a home in 1981 did not experience this high inflation rate. On the other hand, transportation and Medical Care were two other areas that showed dramatic increases, and those may indeed affect a wider spectrum of consumers.

Dr. Timothy Hogan reports that economists are forecasting a continuation of double digit inflation for this year, but conditions are expected to improve as the year progresses. The outlook for 1982 is significantly brighter, he suggests.

Food prices, which rose only 9.5 percent during 1980, exhibited a slower rate of increase than the previous year's 10.6 percent rise but a higher rate than the nation's 8 percent increase. The outlook for 1981, however, is not nearly so bright for food prices. Dr. Hogan reports that consumers can expect price increases in virtually every area, especially meats, poultry and eggs. Record high cattle prices could occur before mid-year. Fats and oils will experience sharp increases, and sugar prices will also rise, but the annual rate of increase for 1981 should stay below 10 percent.

The construction industry was buoyed by a spurt in the industrial permits and a steady increase in the commercial permits in spite of the housing slump, according to Dr. Jay Q. Butler. He reports that single-family construction will continue to be slow throughout the early months of 1981, but interest rates can be expected to drop somewhat by the end of the year with a resulting surge in construction activity.

Consumer Prices: A Record Increase in 1980

TIMOTHY D. HOGAN
JOHN CLIFFORD ARMSTRONG

During 1980, the annual average increase in consumer prices in the Phoenix area was 15.2 percent — the largest ever recorded in the eleven-year history of the Metropolitan Phoenix Consumer Price Index (CPI). After a brief review of the nature of the Metropolitan Phoenix CPI, this article examines the pattern of consumer price increases in the Phoenix area during 1980 in some detail and discusses the outlook for inflation in 1981.

BACKGROUND ON THE METROPOLITAN PHOENIX CPI

The United States Bureau of Labor Statistics (BLS) has, for almost sixty years, compiled the statistical measure most often used to measure inflation — the Consumer Price Index. The BLS now conducts price surveys in 85 urban areas throughout the United States and produces a national Consumer Price Index as well as local indexes for twenty-eight metropolitan areas in the country.

Because Phoenix has never been one of the urban areas surveyed by the BLS, the Arizona State University

Bureau of Business and Economic Research developed a Metropolitan Phoenix CPI in 1974. The methodology for the Phoenix CPI was developed with the help of the BLS and is consistent with the methodology used in producing the national index. The first Metropolitan Phoenix CPI was based on a comprehensive price survey undertaken in fall, 1974; in order to provide historical price trends, Phoenix area indexes for the years 1969 through 1973 were reconstructed on the basis of price information compiled for the Bureau's Metropolitan Phoenix Urban Family of Four Budget Study. In this way, the fourth quarter of 1969 was used as the base period, and CPI figures for the fourth quarters of 1969 through 1974 were derived. Quarterly CPI figures have been compiled by the Bureau since 1975.¹ Cosponsor of the current CPI study is Valley National Bank.

Following their policy of periodic updating of CPI methodology, the Bureau of Labor Statistics began a revised CPI series in January, 1978.² Corresponding changes in methodology for the local CPI were also implemented during 1978. Beginning with the first quarter of 1979, publication of Metropolitan Phoenix CPI figures were based upon the revised methodology. For reference purposes, the complete twelve-year Metropolitan Phoenix CPI figures are presented at the end of this article. (See pages 10-11.)³

Before examining what happened to Phoenix area consumer prices during 1980, it is important to discuss what the CPI measures as well as what it does not measure. As its name implies, the Consumer Price Index measures changes in the prices of goods and services typically purchased by consumers. It compares the cost of a *fixed* market basket of goods and services in a given

Increases in the cost of Transportation and Housing were the main contributors to the 15.2 increase in the 1980 Consumer Price Index for the Phoenix area.

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time period with the cost of purchasing the *same* market basket during a particular base period. At present, the United States CPI compares current consumer prices with prices of similar goods and services in 1967.

Since no comprehensive consumer price survey information for the Phoenix area was collected prior to 1969, the Bureau's Metropolitan Phoenix CPI employs 1969 as its base year; thus the price level during 1969, is equal to 100. If the value of the CPI in a given period were 200, this would indicate that prices in general are twice as high as they were during the base period; in other words, it would cost two times as much to buy the *same* market basket of goods and services as it did during the base period.

The CPI is the statistical measure most often used to monitor inflation. Specifically, what is commonly termed "the inflation rate" for a given period is frequently derived by computing the annualized percentage change in the CPI for that period. For example, if the CPI were to increase to 220 from a level of 200 a year previous, the annual rate of inflation in consumer prices would be 10 percent during that year (that is, the index increased 20 points during the year from an initial level of 200 — a 10 percent increase).

Several different methods can be used to calculate the inflation rate for a year. One method is to use the annual average percent change, which in the Phoenix area resulted in a 15.2 percent inflation rate. This is the method used in this article. The process involves averaging the four quarterly index values for a given year and comparing this average to the average of the previous year. The national index, which is monthly however, uses the twelve monthly indexes to compute the average.

The second method of calculating the inflation rate is simply to compute the percentage difference between the index value at the end of the year and the index value at the end of the previous year. This is the method used in the quarterly CPI reports published in *Arizona Business*. Thus, in 1980 in Phoenix, the annual average percent change was 15.2 percent, but the change from the end of 1979 to the end of 1980 was only 13.3 percent. The difference between the two methods reflects the pattern of inflation during the year which was much higher in the first quarter than in later quarters, meaning that, on the average, consumers paid more for goods during the year than they would have if the inflation rate had been constant throughout the year.

A third method of calculating the inflation rate is not used in Phoenix, but is frequently used with the

national index. This method involves computing the inflation rate for one month into an annual rate by multiplying the one month percentage change by twelve, at a compounded rate. Thus, it is possible to have three very different inflation rates expressed at the same time.

When first published by the United States Bureau of Labor Statistics, the CPI was called a cost-of-living index rather than a price index, and it is widely used as a measure of changes in living costs. This use of the CPI as a cost-of-living index has led to increasing controversy concerning its accuracy as a measure of inflation. Because it has been designed to measure price changes in a representative market basket of goods and services purchased by consumers, the CPI is not really a cost-of-living index. The CPI does not include changes in significant components of most households' living costs — most notably income and Social Security taxes. With its fixed market basket, the CPI also does not reflect changes over time in consumer taste or product offerings. The CPI is also criticized for its treatment of homeownership costs. Changes in the current purchase prices of homes and in current mortgage interest rates are included in the CPI in the same way that changes in the current price of apples or children's shoes are. Critics argue that homeownership should be treated differently since, for example, home purchases are usually financed over a long period of time. Furthermore, home purchases are partially an investment in real property, and a home purchase has important tax implications. Because of such limitations, critics contend that the CPI has overstated the "real" increases in living costs experienced by most consumers in recent years. The CPI measures changes in consumer prices; the way those price changes affect each household's living costs depends upon how that household chooses to spend its income.⁴

Finally, it should also be noted that the CPI measures only relative changes in price levels; it *cannot* be used to compare absolute prices among different regions. A comparison of the Metropolitan Phoenix CPI with the national CPI (or indexes for any other urban area) does not indicate whether consumer prices in the Phoenix area are higher or lower than the average prices throughout the United States (or prices in the comparison city). If the CPI for city "A" were 200 and 250 for city "B", these figures indicate only that prices have increased more rapidly in city "B" since the base period. Since price levels could have been quite different in the two cities during the base period, it is impossible to tell from the CPI whether current prices are higher in city "B" or in city "A".

PHOENIX CONSUMER PRICES IN 1980

In spite of its limitations, the Consumer Price Index continues to be the most widely used and accepted measure of price changes. As measured by the Metropolitan Phoenix CPI, consumer prices rose more rapidly in 1980 than they had in any year during the 1969-1979 period for which statistics are available. The pattern of price increases portrayed by the *All Items* category of the CPI for the entire twelve years is presented in Figures I and II. The previous high of 14.5 percent in 1979 was surpassed as the annual average inflation rate reached 15.2 percent in 1980. While the pace of inflation during the past year did increase above its 1979 rate, it is some comfort that the trend of successively higher rates of inflation did moderate with the rate in 1980 only slightly higher than in the previous year. The rate of inflation in Phoenix area consumer prices had shown dramatic acceleration during the 1976-1979 period — from 5.3 percent in 1976, 7.6 percent in 1977, 10.2 percent in 1978, and 14.5 percent in 1979 — as a result of the economic expansion after the 1974-1975 recession and skyrocketing energy prices. With a recession expected during 1980, a slowing in the rate of inflation was anticipated last year. Nevertheless, record high mortgage rates and continued sharp increases in energy costs contributed to the 15.2 percent jump in the Metropolitan Phoenix CPI experienced in 1980. A detailed breakdown of the pattern of increases in each expenditure category in the Phoenix area CPI is set forth in Table 1. The relative proportion that each expenditure category constitutes in the total market basket of consumer goods and services has also been included in the table to indicate the relative contribution of individual increases in the overall inflation rate.⁵

Of the seven major categories posted in Table 1, prices in five major categories rose faster in 1980 than in 1979: *Food and Beverages* (10.6 percent), *Transportation* (18.4 percent), *Medical Care* (14.6 percent), *Entertainment* (12.9 percent), and *Other Goods and Services* (7.7 percent). On the other hand, prices in *Housing* (17.9 in 1980 versus 18.8 percent in 1979) and *Apparel and Upkeep* (1.7 compared with 7.3 percent) increased less than in 1979.

While prices of *Food and Beverages* rose significantly (10.6 percent), this increase was lower than the 1978 rate of 12.3 percent and only slightly higher than that recorded for 1979 (10.2 percent). Of the two *Food and Beverages* subcategories, Food at Home rose at a slower pace in 1980 (9.5 percent) than in 1979 (10.6 percent). Large increases in Cereal and Bakery Products

FIGURE I
METROPOLITAN PHOENIX
CONSUMER PRICE INDEX
Annual Average Indexes 1969-1980

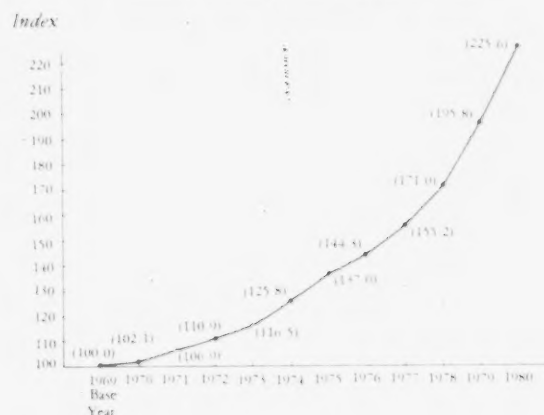
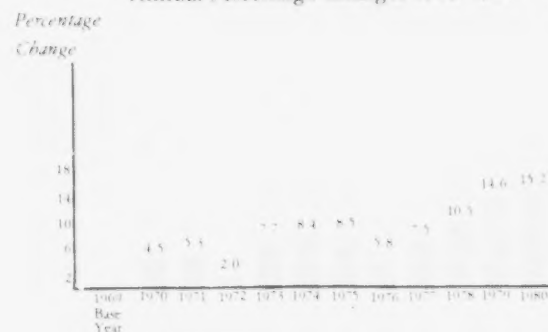


FIGURE II
METROPOLITAN PHOENIX
CONSUMER PRICE INDEX
Annual Percentage Changes 1969-1980



(12.1 percent) and Other Foods at Home (14.1 percent) were tempered by a modest 3.6 percent rise in Meats, Poultry, Fish, and Eggs. (A detailed analysis of 1980 Phoenix Food at Home prices is presented in the following article.) The slower increase of Food at Home prices was, however, completely offset by a large increase in Food Away from Home prices. Phoenix area full-service and fast-food restaurants increased prices by 14.0 percent in 1980, compared with 9.5 percent in 1979.

Price increases in the *Housing* category were a major factor in the record high rate set by the Metropolitan Phoenix CPI last year. Of the three major subcategories

TABLE 1
METROPOLITAN PHOENIX CONSUMER PRICE INDEX
SELECTED ITEMS 1979-1980
(1969 = 100 Unless Otherwise Noted)

<i>Weights^a (Expressed as a percentage of ALL ITEMS)</i>	<i>Group</i>	<i>1979 Yearly Average</i>	<i>1980 Yearly Average</i>	<i>Percentage Change 1979 to 1980</i>
100.000	ALL ITEMS	195.8	225.6	15.2
17.437	Food and Beverages	190.3	210.8	10.8
16.226	Food	194.4	215.5	10.9
10.847	Food at Home	205.9	225.5	9.5
1.297	Cereals and Bakery Products	196.6	220.5	12.2
3.278	Meats, Poultry, Fish, and Eggs	215.4	223.0	3.5
1.527	Dairy Products	184.1	201.8	9.7
1.635	Fruits and Vegetables	198.7	218.3	9.9
3.109	Other Foods at Home	218.3	249.1	14.1
5.379	Food Away From Home	171.2	195.2	14.0
1.212	Alcoholic Beverages	136.6	149.8	9.6
46.322	Housing	193.5	228.1	17.9
33.311	Shelter	196.8	239.1	21.5
6.479	Rent, Residential	164.2	176.0	7.2
26.763	Homeownership	200.3	250.2	25.0
9.366	Contracted Mortgage Interest Cost	126.0 ^b	183.7 ^b	45.8
11.773	Home Purchase	116.4 ^b	134.0 ^b	15.1
5.032	Fuel and Other Utilities	213.3	240.1	12.6
2.650	Gas and Electricity	115.0 ^b	138.2 ^b	20.1
2.093	Other Utilities and Public Services	101.0 ^b	103.2 ^b	2.2
7.980	Household Furnishing and Operations	177.1	187.9	6.1
5.341	Apparel and Upkeep	169.1	172.0	1.7
4.795	Apparel Commodities	164.7	164.1	-0.4
1.496	Men's and Boys' Apparel	144.7	150.1	3.7
1.797	Women's and Girls' Apparel	167.3	159.6	-4.6
0.692	Footwear	203.0	204.2	0.6
0.547	Apparel Services	110.0 ^b	123.8 ^b	12.6
17.657	Transportation	204.3	241.9	18.4
16.677	Private Transportation	204.2	240.6	17.8
2.337	New Car	105.7 ^b	120.2 ^b	13.7
2.705	Used Car	90.3 ^b	93.3 ^b	3.3
4.327	Gasoline	131.0 ^b	179.0 ^b	36.7
2.045	Vehicle Maintenance and Repair	102.4 ^b	111.3 ^b	8.6
1.891	Vehicle Insurance	103.9 ^b	124.4 ^b	19.8
0.980	Public Transportation	205.9	264.1	28.3
0.585	Airline Fare	114.7 ^b	148.3 ^b	29.3
5.350	Medical Care	266.6	305.5	14.6
2.465	Professional Services	112.3 ^b	134.0 ^b	19.3
0.306	Hospital and Other Medical Care Services	106.5 ^b	126.7 ^b	19.0
1.795	Health Insurance	102.2 ^b	112.0 ^b	9.6
4.341	Entertainment	167.7	189.3	12.9
1.028	Sporting Goods and Equipment	110.5 ^b	124.6 ^b	12.8
1.182	Toys, Hobbies, and Other Entertainment	109.6 ^b	124.3 ^b	13.4
1.597	Admission, Fees, Other Entertainment	97.9 ^b	110.1 ^b	12.5
3.551	Other Goods and Services	201.5	217.0	7.7
1.624	Personal Care	194.7	214.5	10.2

^aSeveral levels of detail are provided in this table. The weights of major categories equal 100. The weights of the other items shown are components and subcomponents of the major categories. Not all detail items are shown, thus the weights associated with these detail items will not necessarily total the weights of the major categories; the weights are illustrated to allow comparison of the significance of the various items.

^bBase period = Fourth quarter, 1978.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

in *Housing*, only Household Furnishings and Operations experienced a moderate increase (6.1 percent). Fuel and Utilities posted a 12.6 percent rise, led by significant increases in energy prices — gas and electricity (20.1 percent). Shelter, the most heavily weighted subcategory in the CPI (33.3 percent of *All Items*), jumped ahead by 21.5 percent during 1980, fueled by soaring contracted mortgage interest costs (up 45.8 percent) and a substantial increase in home purchase prices (15.1 percent). The 1980 rise of prices in the *Housing* category (17.9 percent) does, however, compare favorably with the 1979 increase of 18.8 percent. However, even though the rate of increase for *Housing* declined in 1980, it did not drop enough to offset increases in other categories.

Prices in the *Apparel and Upkeep* category rose only slightly in 1980 (1.7 percent), down from the 7.4 percent increase of 1979 and the 7.7 percent increase of 1978. A jump in apparel services (laundry and apparel repair) of 12.6 percent was countered by a decrease in the more heavily weighted subcategory of apparel commodities (-0.4 percent).

Transportation is the second most heavily weighted major category in the CPI (17.7 percent of *All Items*). With oil prices still rising sharply, the 18.4 percentage increase in the Phoenix *Transportation* prices during 1980 was a record rate of price increase for this expenditure category. Large increases in the price of gasoline (36.7 percent), vehicle insurance (19.8 percent), and new automobiles (13.7 percent), pushed the subcategory of Private Transportation to a 17.8 percent rise. Prices in the Public Transportation subcategory rose even more rapidly during 1980 (28.3 percent), due to considerable price increases for almost every type of public transportation. Airline fares in particular gained substantially (29.3 percent) despite increases in industry competition.

In the category of *Medical Care*, sizable gains in the cost of professional services (19.3 percent) and hospital care (19.0 percent) led to an overall increase of 14.6 percent in 1980 as compared with the 8.4 and 11.4 percent rises posted during 1978 and 1979.

Prices in the *Entertainment* category also rose above their 1979 level (6.8 percent). The 1980 increase of 12.9 percent reflects across-the-board gains in entertainment supplies and admission fees. The category of *Other Goods and Services* rose by 7.7 percent in 1980, up from the 5.7 percent increase posted for 1979. Accelerating tuition and legal fees, and increased costs of Personal Care (cosmetics, beauty parlor services, and smoking accessories) contributed to this increase.

PHOENIX AREA INFLATION COMPARED WITH OTHER AREAS

During 1980 prices seem to have risen more rapidly in the Phoenix area than in the nation as a whole (15.2 percent in Phoenix versus 13.5 percent for the United States city-average). Comparative data between the Phoenix Metropolitan CPI and that of the United States, along with the Chicago and Los Angeles-Long Beach metropolitan areas, are shown in Table 2. Examination of the relative price changes for the Phoenix area and the United States reveals that Phoenix increases in 1980 were larger than the national average for all but two major categories. Prices of *Food* (10.9 percent compared with 8.6 percent), *Housing* (17.9 percent versus 15.7 percent), *Transportation* (18.4 percent versus 17.8 percent), *Medical Care* (14.6 percent versus 10.9 percent), and *Entertainment* (12.9 percent versus 8.9 percent) rose faster in Phoenix than in the nation as a whole. Only price increases for *Apparel and Upkeep* (1.7 percent versus 7.1 percent) and *Other Goods and Services* (7.7 percent compared with 9.0 percent) were smaller in Phoenix than in the nation as a whole. Within the *Housing* category, Homeownership was the only subcategory in the Metropolitan Phoenix CPI that rose more rapidly than the national averages. Increases in Residential Rent, Fuel and Utilities, and Household Furnishings and Operations were all higher for the rest of the country than in the Phoenix area. *Apparel and Upkeep* showed the largest discrepancy between Phoenix and the nation as a whole. Area clothing and footwear price increases were substantially below the national average.

Relative to the two metropolitan areas historically used for comparison purposes, the 15.2 percent increase recorded for the Phoenix area in 1980 outstripped the rate of consumer price increases in Chicago (14.4 percent) but compared favorably with the 15.7 percent inflation rate in the Los Angeles area. Phoenix area prices rose more rapidly in the categories of *Food*, *Medical Care*, and *Entertainment* than in either of the other two comparison cities. *Housing*, *Apparel and Upkeep*, and *Other Goods and Services*, on the other hand, increased more rapidly in the Los Angeles area. Chicago led in the *Transportation* category.

The fact that the Metropolitan Phoenix Consumer Price Index has risen more rapidly than that of the United States as a whole or Chicago does not mean that prices themselves are higher in Phoenix than elsewhere in the nation. The CPI measures only *changes* in prices over time; it cannot be used to compare the actual

TABLE 2
CONSUMER PRICE INDEX CHANGES
1979 - 1980
Phoenix, United States, Chicago, and Los Angeles

Group	Phoenix ^a		United States		Chicago ^b		Los Angeles	
	1980		1980		1980		1980	
	1980 Average Index	Percentage Change Over 1979 Average	1980 Average Index	Percentage Change Over 1979 Average	1980 Average Index	Percentage Change Over 1979 Average	1980 Average Index	Percentage Change Over 1979 Average
ALL ITEMS	225.6	15.2	246.8	13.5	245.5	14.4	247.3	15.7
Food	215.5	10.6	254.6	8.6	258.2	9.0	248.7	8.4
Food at Home	225.5	9.5	251.5	8.0	252.5	7.9	250.2	9.1
Food Away From Home	195.2	14.0	267.0	9.9	271.1	11.3	247.2	7.1
Housing	228.1	17.9	263.3	15.7	255.7	17.1	268.0	19.7
Shelter	239.1	21.5	281.7	17.5	276.7	19.0	294.5	21.9
Rent, Residential	176.0	7.2	191.6	8.9	172.7	7.2	211.3	12.1
Homeownership	250.2	25.0	314.0	19.7	323.6	22.3	322.1	24.6
Fuel and Other Utilities	240.1	12.6	278.6	16.4	246.0	16.1	230.7	21.5
Household Furnishing and Operations	187.9	6.1	205.4	7.9	200.4	10.0	198.5	8.4
Apparel and Upkeep	172.0	1.7	178.4	7.1	157.9	5.7	169.3	10.5
Men's and Boys' Apparel	150.1	3.7	168.4	4.7	129.1	3.0	153.1	6.3
Women's and Girls' Apparel	159.6	-4.6	155.1	2.1	138.0	1.1	142.7	1.8
Footwear	204.2	0.6	190.3	7.7	174.5	4.9	182.8	11.6
Transportation	241.9	18.4	249.7	17.8	253.5	18.6	255.2	17.3
Private	240.6	17.8	249.2	17.4	254.7	18.4	256.9	16.5
Public	264.1	28.3	251.6	25.6	237.2	21.5	221.0	34.3
Medical Care	305.5	14.6	265.9	10.9	272.9	12.9	275.6	12.6
Entertainment	189.3	12.9	205.3	8.9	221.1	12.1	183.4	9.0
Other Goods and Services	217.0	7.7	214.5	9.0	213.9	9.1	208.7	10.3

^aPhoenix metropolitan SMSA

^bChicago and Northwest Indiana SMSA

^cLos Angeles-Long Beach area SMSA

Source: Metropolitan Phoenix data: Bureau of Business and Economic Research, College of Business Administration, Arizona State University; other data computed from indices compiled by the U.S. Department of Labor, Bureau of Labor Statistics.

prices or living costs from one area to another. A higher Consumer Price Index value for Phoenix means only that prices in Phoenix have increased faster since the base period than they have in the nation as a whole or in the comparison cities. Local prices may simply be catching up with the rest of the country.

INFLATION OUTLOOK FOR 1981

After reviewing the inflation in 1980, the obvious question is, How much will consumer prices increase in

the Metropolitan Phoenix area during 1981? Each year in the December issue of *Arizona Business*, Professors John A. Cochran and Richard D. Winkelman present economic forecasts for the upcoming year. In his latest forecast for the United States economy, Professor Cochran predicted that "the national inflation rate should fall somewhat from the more than 13 percent rate at the retail level in 1980 to about 10 percent for 1981."⁶ With respect to the Phoenix area, Professor Winkelman's forecast for 1981 was based upon the ASU Forecasting Model, which predicted a percentage

increase in the Metropolitan Phoenix CPI for this year of 12 percent.⁷

These forecasts are consistent with forecasts offered by other economists and/or forecasting models. For example, in their 1981 forecast issues, *Business Week's* panel of thirty-three business economists predicted an inflation rate of 9.6 percent for the year, *U.S. News and World Report* forecast a 10.4 percent increase in prices, and *Fortune* suggested the United States CPI would again show a double digit rise during 1981. In the latest available forecast from its widely-used national econometric forecasting model (which was based upon more current information than the previously cited forecasts), Data Resources Inc. predicts an 11.5 percent increase in the national CPI during 1981, with a continuing decline in inflation over the year so that the annualized rate of increase is forecast to drop to the 10 percent level by the beginning of 1982.⁸

Many explanations can be offered as to why double-digit inflation rates are expected to continue during 1981. First, on a general level, high rates of inflation have now existed in the United States economy for a sufficient period of time so that strong inflationary expectations have been established throughout the economy. Through cost-of-living clauses and other contractual arrangements, big price and wage increases are already a fact of life for 1981 almost irrespective of economic conditions. For example, Michael K. Evans of Evans Economics Inc., a well-known Washington economics consulting firm, asserts that "a 10.5 percent increase in labor costs . . . [in 1981] . . . will set the floor on price increases."⁹ Several more specific factors that will push the economy toward double-digit inflation this year could be listed, for example: (1) The impact of the decontrol of domestic oil prices will cause retail prices of gasoline and other petroleum-based products to rise sharply. (2) Retail grocery prices are predicted to increase 10 to 15 percent in 1981 after being a moderating influence on the overall inflation rate in recent years (see the following article for more detailed analysis of probable food price increases). (3) Consumers' utility costs are also forecast to continue to rise rapidly due to oil and gas price increases and higher construction and operating costs.

It is difficult to be very optimistic about the probable trends in consumer prices, given the overwhelming predictions of continued double-digit inflation for 1981 and given the fact that for the past several years economic forecasters have consistently underestimated future inflation rates. Nevertheless, there are a few hopeful signs for the future. First, most economists look for interest rates to decline somewhat during the year. Any decline in mortgage rates will have a direct effect of lowering the cost of homeownership, which is a big component of the market basket of goods and services included in the CPI. Secondly, forecasters generally expect the first part of 1981 to bring most of the worst news on the inflation front with conditions improving as we move toward 1982. Finally, the proponents of President Reagan's proposed economic program argue that expectations play a major role in the inflationary process. Thus, once the public believes that government policymakers really intend to do all in their power to control inflation, inflationary psychology and the actual rate of price increases can be reduced much sooner than most people realize.

SUMMARY AND CONCLUSION

The annual average increase in consumer prices in 1980 was 15.2 percent in the Metropolitan Phoenix Area compared with 13.5 for the United States as a whole. Unlike 1979 when all of the divergence in the Phoenix rate from the national average could be attributed to differences in homeownership costs, local prices increased more rapidly than for the nation as a whole in five of the seven major expenditure categories in 1980.

Based upon a consensus of inflation forecasts, there is little hope for a substantial decline in consumer inflation for the near term. Some economists do predict some slackening in the rate of price increases in the latter part of 1980 as mortgage rates begin to drop and the price effects of decontrol of oil prices recede. However, proposed economic policies by the Reagan administration should not really be counted on to produce significant impacts upon inflation until 1982.¹⁰

¹For details on the development of the Phoenix area budget study, see Don V. Plantz and Don C. Warner, "A Three-Year Analysis of the Cost of Living," *Arizona Business Bulletin*, May, 1971, pp. 3-20. Readers interested in the development of the Metropolitan Phoenix CPI should refer to Stephen C. Hora, "Consumer Prices in the Phoenix Metropolitan Area," *Arizona Business*, August-September, 1975, pp. 3-13.

²For a detailed description of these revisions, see the U. S. Department of Labor, Bureau of Labor Statistics, *The Consumer Price Index Revision — 1978*, Washington, D. C., 1978.

³See Timothy D. Hogan, "The 1979 Consumer Price Index: Its Background and Significance," *Arizona Business*, March, 1980, pp. 3-9. With their 1978 revisions, the BLS changed their classification scheme for expenditure categories. The categories employed for the

METROPOLITAN PHOENIX CONSUMER PRICE INDEX
1969 THROUGH 1980
(1969 = 100)

Group							1975				1976			
	1969	1970	1971	1972	1973	1974	I	II	III	IV	I	II	III	IV
ALL ITEMS	100.0	104.2	109.6	112.1	120.8	130.7	133.0	135.2	138.0	141.7	141.5	142.9	145.3	147.3
Food and Beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Food	100.0	102.3	103.4	108.8	126.4	138.7	143.7	145.1	150.6	151.0	148.8	147.8	151.2	150.1
Food at Home	100.0	102.2	102.1	110.7	133.1	145.5	150.9	152.3	159.0	158.5	155.1	153.5	155.4	153.4
Cereals and Bakery Products	100.0	103.3	105.4	108.3	130.3	156.2	168.1	165.4	168.8	159.6	156.2	151.6	152.4	151.3
Meats, Poultry, Fish, and Eggs	100.0	100.1	102.1	117.3	151.4	140.9	142.4	151.0	171.4	171.1	161.8	159.5	160.5	150.2
Dairy Products	100.0	104.6	99.5	101.8	120.6	131.1	134.8	136.4	137.2	143.0	145.5	144.2	146.6	147.2
Fruits and Vegetables	100.0	101.5	106.1	113.9	123.4	145.0	148.7	152.0	158.6	148.9	148.3	148.6	147.2	151.6
Other Foods at Home	100.0	104.0	100.3	106.0	122.0	157.4	167.6	158.6	152.6	156.5	156.2	156.0	162.2	165.7
Food Away From Home	100.0	102.5	107.3	103.4	107.0	119.1	122.7	124.2	126.4	129.3	130.7	131.4	138.9	140.6
Alcoholic Beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Housing	100.0	101.2	103.9	104.8	110.9	121.4	123.8	126.2	128.5	133.1	132.2	133.7	135.2	137.3
Shelter	100.0	100.7	105.9	103.8	109.9	118.4	121.1	122.6	125.3	129.6	127.0	128.9	129.9	131.7
Rent, Residential	100.0	104.2	109.0	112.8	117.6	115.9	112.7	117.3	115.8	122.9	123.6	124.2	125.1	127.7
Homeownership	100.0	99.8	105.1	101.6	108.0	119.0	123.4	123.4	127.3	126.1	122.2	124.6	125.6	126.9
Fuel and Other Utilities	100.0	105.4	105.7	122.0	132.8	147.5	147.5	147.2	149.8	170.2	174.8	172.4	179.6	183.3
Household Furnishings and Operation	100.0	102.3	94.9	104.6	109.2	127.4	129.7	139.4	139.7	138.7	143.3	144.0	145.6	148.5
Apparel and Upkeep	100.0	105.5	104.8	106.9	115.4	123.8	124.2	128.2	129.9	129.9	132.0	133.6	136.1	139.6
Apparel Commodities	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Men's and Boys' Apparel	100.0	102.3	97.9	95.9	108.6	118.2	110.8	111.9	118.9	109.6	110.5	111.7	116.4	121.1
Women's and Girls' Apparel	100.0	104.8	107.3	110.9	115.9	121.6	129.6	133.6	136.8	137.7	138.0	140.0	141.6	144.1
Footwear	100.0	106.5	105.6	112.1	125.0	133.0	144.6	144.0	146.4	147.3	150.2	153.0	158.3	161.6
Transportation	100.0	103.4	120.5	119.7	134.6	141.2	143.6	141.2	144.7	147.7	147.3	151.6	157.2	158.7
Private Transportation	100.0	103.4	120.9	120.0	135.6	141.5	143.8	140.9	144.6	147.5	146.9	151.4	157.5	159.0
Public Transportation	100.0	104.2	112.5	112.5	112.5	134.8	138.2	143.3	143.6	146.1	148.5	150.0	150.5	153.0
Medical Care	100.0	133.2	155.6	164.1	165.2	170.9	180.6	184.0	191.5	197.1	201.8	203.8	206.9	210.1
Entertainment	100.0	98.7	113.4	114.5	115.3	125.7	130.4	130.3	127.3	132.1	133.6	134.8	134.8	139.2
Other Goods and Services	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Personal Care	100.0	109.1	106.0	110.4	120.0	138.5	132.7	137.1	137.4	142.5	144.4	146.3	147.5	151.3

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, 1981.

(Endnotes continued from page 9)

Metropolitan Phoenix CPI were modified beginning in 1979 to conform with the BLS revisions; therefore, separate indexes for some expenditure categories are not available prior to 1979.

⁴For a more detailed discussion of the controversy concerning the use of the CPI, see *Ibid.*

⁵The relative importance weight associated with each expenditure category is based upon the expenditure patterns of urban households in the western region of the United States compiled from information collected by the BLS in a 1972-1973 household expenditure survey. Since not all expenditure subcategories are shown, the sum of the weights presented will not add to 100.0 percent.

⁶John A. Cochran, "National Economic Outlook for 1981: A Year Of Transition," *Arizona Business*, December, 1980, p. 3.

⁷Richard D. Winkleman, "The Arizona Economic Scene: Expectations for 1981," *Arizona Business*, December, 1980, p. 10.

⁸"The Year Should Improve With Age," *Business Week*, December 29, 1980, pp. 72-74; "Inflation in '81: Prospect is Still Glum," *U. S. News and World Report*, January 5, 1981, pp. 55-58; "A Pause Before Real Expansion Begins," *Fortune*, January 12, 1981, pp. 7-12; Data Resources, Inc., *U. S. Forecast Summary*, February, 1981.

⁹*Business Week*, p. 74.

¹⁰The assistance of the Bureau's Research Specialist Tom Rex and of Susan Baerst, Maria Hesse, Lori Lieberman, Chris Lockwood, Ellen Montanari, James Robertson, Jo Stimson, Cynthia Weigand, and Carol Zimmerman in the compilation of the CPI during 1980 and the preparation of this article is acknowledged with appreciation.

METROPOLITAN PHOENIX CONSUMER PRICE INDEX
1969 THROUGH 1980 (Continued)
(1969 = 100)

1977				1978				1979				1980			
I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
150.2	153.7	157.1	159.9	163.6	168.6	173.4	178.3	184.0	193.7	199.0	206.5	220.7	220.9	226.6	234.0
—	—	—	—	—	—	—	—	183.4	189.6	192.3	195.9	202.3	207.1	213.9	220.0
155.1	159.3	164.4	165.3	169.7	178.8	181.9	183.9	187.1	193.8	196.3	200.2	206.7	211.6	218.5	225.0
160.1	163.9	169.4	170.3	175.5	186.7	190.1	192.5	199.6	204.7	206.9	212.2	216.4	221.2	228.6	235.7
155.1	157.9	168.1	169.6	174.1	181.3	184.6	187.0	190.5	190.9	199.1	205.8	212.1	219.4	222.9	227.4
154.2	155.0	162.4	163.9	174.0	194.7	201.2	202.3	211.3	223.7	213.3	213.3	218.3	215.5	224.8	233.5
147.3	149.3	152.4	153.6	154.5	157.7	160.1	169.0	176.9	180.4	185.8	193.1	195.3	199.1	202.4	210.2
161.4	163.6	159.2	163.8	168.8	188.6	191.0	188.0	193.6	193.7	202.0	205.6	202.1	213.3	226.6	231.2
180.9	193.1	202.0	198.5	199.5	197.7	197.6	201.8	209.8	213.1	220.2	230.2	237.8	246.6	252.4	259.7
140.8	145.9	150.0	150.8	153.0	156.0	158.2	159.2	162.0	171.9	175.0	176.0	187.1	192.3	198.1	203.4
—	—	—	—	—	—	—	—	133.5	134.3	139.4	139.1	144.2	147.6	153.1	154.1
140.0	143.8	146.5	149.1	153.5	157.1	164.6	170.7	178.2	191.5	197.1	207.0	224.8	222.6	228.2	236.9
134.2	138.4	139.9	142.8	147.8	151.5	160.7	169.0	177.3	195.5	200.9	213.6	237.5	230.5	237.4	251.0
132.1	133.5	135.9	139.2	143.4	142.8	146.2	148.9	159.8	161.3	165.4	170.2	172.3	175.7	177.5	178.3
128.5	133.6	134.7	137.3	142.3	147.8	159.2	169.8	177.1	199.3	204.9	219.7	249.5	239.2	247.4	264.8
191.8	193.3	206.8	205.6	203.9	207.7	208.8	196.8	204.8	203.7	221.1	223.7	225.9	245.7	252.0	236.8
150.0	152.7	157.0	159.4	163.6	166.7	167.8	170.6	175.0	176.7	176.6	179.9	184.9	187.0	187.9	191.7
142.0	145.4	147.2	150.6	151.6	155.6	158.8	164.0	166.2	168.5	172.2	169.4	170.2	170.2	172.9	174.5
—	—	—	—	—	—	—	—	162.7	163.2	167.6	165.4	164.2	163.9	164.3	164.1
124.7	129.0	133.8	135.4	141.2	143.2	141.3	144.0	145.3	145.9	142.2	145.3	150.0	148.7	150.9	150.6
145.7	149.1	149.5	154.9	151.0	155.8	164.5	168.7	167.7	162.9	173.3	165.4	158.7	157.1	163.1	159.4
163.2	168.4	172.1	171.7	175.4	181.5	177.4	187.5	187.2	202.4	211.8	210.7	209.0	215.8	190.7	201.4
159.5	162.0	170.1	174.0	174.4	182.4	185.0	188.0	190.3	199.3	208.1	219.6	238.7	238.0	242.6	248.4
159.7	162.3	170.4	174.2	174.4	182.6	185.2	188.3	190.6	199.6	207.8	218.7	238.6	237.3	240.9	245.4
155.0	156.3	163.4	172.5	177.7	178.5	179.8	181.9	184.7	193.1	212.5	233.4	238.0	248.9	270.0	299.6
215.3	219.6	220.8	223.7	233.0	237.2	239.2	248.3	254.5	259.7	267.3	285.0	295.1	299.0	310.4	317.3
142.9	145.2	145.8	147.8	153.7	155.0	156.3	163.1	165.1	167.2	170.9	167.6	182.3	183.4	189.1	202.2
—	—	—	—	—	—	—	—	197.0	202.8	204.1	202.1	209.9	213.4	218.4	226.2
154.4	159.7	158.8	162.8	169.8	174.9	178.5	183.7	186.3	197.6	196.1	198.8	209.3	210.3	216.1	222.2

1980: A Moderating Year for Food Prices

TIMOTHY D. HOGAN
ELLEN ORTON MONTANARI

Retail prices for food in the Phoenix area increased 9.5 percent in 1980, slowing from a rise of 10.6 percent in 1979 and a 12.2 percent increase in 1978. The 9.5 percent increase in food prices was much less than the 15 percent annual increase for consumer prices in general as recorded by the Metropolitan Phoenix Consumer Price Index (CPI) in 1980. In fact, higher retail food prices contributed less than one-fourteenth of the total increase in consumer prices during the past year. Unlike 1979, however, the 1980 rate of increase in food prices for the Phoenix area was higher than the 8 percent rise for the nation as a whole.

The next section details the pattern of food price changes in the Phoenix area during 1980. The third section discusses the factors that led to those changes, and the fourth section compares the 1980 Phoenix experience with that of Chicago, Los Angeles, and the

United States as a whole. The final section discusses the outlook for retail food prices during 1981.¹

A REVIEW OF 1980

In 1980, the average food price index for Maricopa County rose to 241.7 — an increase of 21 points over the 1979 average index of 220.7. This index is calculated on the basis of a fixed bag of groceries that is priced monthly. These groceries, which on the average cost consumers \$10.00 in 1967, cost them \$22.07 in 1979 and climbed to \$24.17 in 1980. This does not necessarily mean, however, that consumers in Maricopa County paid 9.5 percent more for all their groceries in 1980. Shoppers traditionally substitute lower priced items when prices rise for items they usually purchase. Since the food price index uses a fixed shopping list, those lower priced substitutions may not be on that fixed list and thus may not be reflected in the index.

Price increases in all five basic food categories — *Cereals and Bakery Products*; *Meats, Poultry, Fish, and Eggs*; *Dairy Products*; *Fruits and Vegetables*; and *Other Foods* — contributed to the overall 9.5 percent increase. The monthly changes in each category during 1980 are shown in Table 1 and are graphically depicted in Figure 1. In addition, Table 2 shows the various subcategories of each of these basic categories and their average percentage changes between 1979 and 1980. It is important to note that the index values shown in this table use a base period of December, 1978 and therefore cannot be compared to any table using a base year of 1967.

Both *Other Foods* and *Cereals and Bakery Products* showed dramatic increases last year, rising 14.1 percent

Although food prices increased 9.5 percent in the Phoenix metropolitan area during 1980, this rate is lower than the overall rate of inflation and also lower than the 1979 increase. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University. Cosponsor of the study is Valley National Bank.

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TABLE 1

1980 MONTHLY INDEX OF PERCENTAGE CHANGES
IN MARICOPA COUNTY FOOD PRICES
(1967 Average = 100)

	TOTAL FOOD CONSUMED AT HOME		CEREALS AND BAKERY PRODUCTS		MEATS, POULTRY, FISH AND EGGS		DAIRY PRODUCTS		FRUITS AND VEGETABLES		OTHER FOODS	
	Index	% Change From Previous Month	Index	% Change From Previous Month	Index	% Change From Previous Month	Index	% Change From Previous Month	Index	% Change From Previous Month	Index	% Change From Previous Month
January, 1980	231.7	+0.2	217.1	+0.4	235.6	+1.0	204.1	-0.4	213.4	-2.3	252.1	+0.9
February, 1980	230.4	-0.6	220.3	+1.5	241.9	-1.5	203.6	+0.7	200.6	-6.0	256.5	+1.7
March, 1980	233.8	+1.5	224.4	+1.8	246.1	+1.7	206.3	+0.3	201.8	+0.6	261.9	+2.1
April, 1980	235.6	+0.8	227.7	+1.5	244.4	-0.7	207.0	+0.3	210.7	+4.4	262.8	+0.3
May, 1980	237.8	+0.9	227.7	0.0	239.0	-2.2	210.6	+1.7	221.5	+5.1	268.2	+2.1
June, 1980	237.9	0.0	229.1	+0.6	240.8	+0.7	210.3	-0.2	217.8	-1.6	268.0	-0.1
July, 1980	241.0	+1.3	230.3	+0.5	244.0	+1.3	213.0	+1.3	225.0	+3.3	269.4	+0.5
August, 1980	244.7	+1.6	233.5	+1.4	253.0	+3.7	211.4	-0.8	225.9	+0.4	272.6	+1.2
September, 1980	249.5	+1.9	231.7	-0.8	258.3	+2.1	213.7	+1.1	239.8	+6.2	275.7	+1.1
October, 1980	250.2	+0.3	234.6	+1.3	258.3	0.0	217.1	+1.6	236.6	-1.4	276.8	+0.4
November, 1980	252.2	+0.8	237.3	+1.1	261.6	+1.3	220.0	+1.3	231.2	-2.3	281.0	+1.5
December, 1980	255.6	+1.4	237.7	+0.2	264.6	+1.2	225.5	+2.5	236.9	+2.5	283.6	+0.9

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

and 12.2 percent respectively. Price hikes for nonalcoholic beverages and sugar and other sweets contributed to the gain in *Other Foods*, while almost all prices rose in *Cereals and Bakery Products*.

Fruits and Vegetables rose an average of 9.9 percent during 1980, despite a 1.4 percent drop in prices for fresh fruits. An increase of 24.4 percent for fresh vegetables, however, more than offset that decrease. The index values for *Dairy Products* also continued to climb last year, showing a 9.7 percent hike over 1979 values. Price increases in all subcategories of *Dairy Products* were responsible for the gain.

After climbing 13.8 percent in 1979, prices for *Meats, Poultry, Fish, and Eggs* rose a modest 3.5 percent in 1980. Pork prices actually fell 0.6 percent, while beef prices edged up 4.7 percent. The largest increases in this category were noted for fish and seafood, up by an average of 8.1 percent.

Examination of Table 1 or Figure 1 also demonstrates that the seasonal pattern normally demonstrated by Phoenix food prices — big increases in the first half of the year followed by smaller rises in the last six months — was not followed during 1980. The *Total Food at Home* index rose a modest 2.9 percent during the first six months, but jumped 7.4 percent during the July-December period.

FACTORS LEADING TO THE 1980 EXPERIENCE

The total amount spent by households to purchase food for consumption at home is comprised of three

major components: The farm value of domestically produced foods; marketing costs; and the costs of foods not produced on domestic farms, primarily fish and imported foods. Higher processing and distribution costs (the marketing component) in 1980 accounted for most of the increase in retail food prices.

Prices received by farmers rose very slowly during the first half of the year. Good growing conditions in much of the nation during the 1978-1979 crop year led to larger than normal production, which together with ample stocks of most farm food commodities, kept increases in the farm value of food small. Unfortunately, farm prices for many commodities rose sharply during the second half of the year, resulting in the atypical seasonal pattern of price increases in 1980.

Grain prices rose sharply during the second half of 1980. Food grain prices in November were 21 percent higher than a year earlier and 24 percent higher than prices during the January-June, 1980, period. Farm prices for meats, poultry, and eggs also increased substantially during the second half of the year, primarily as a result of production cutbacks by farmers in response to low prices they received earlier in the year. Poultry and egg prices received by farmers in November, 1980, were 27 percent above the average level of prices during the six months of the year and 15 percent higher than November, 1979, prices.

Retail prices of fresh and processed fruits were one of the bright spots during 1980, primarily as a result of substantially lower farm fruit prices — down 14 percent compared with 1979. Farm-level vegetable prices, on

FIGURE I
INDEX OF FOOD AT HOME COSTS:
MONTHLY CHANGES IN MARICOPA COUNTY, 1980
(Average 1967 = 100)

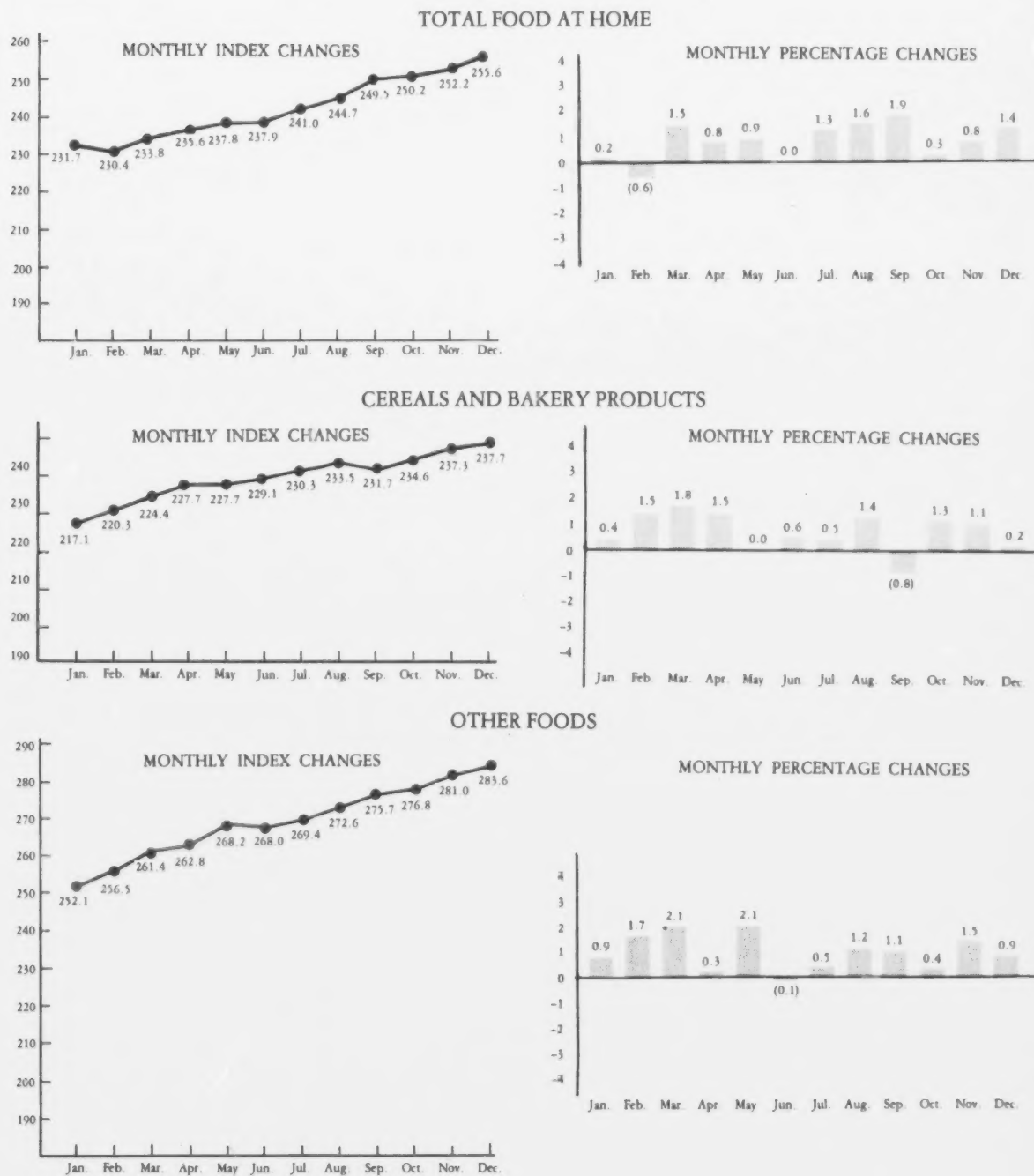
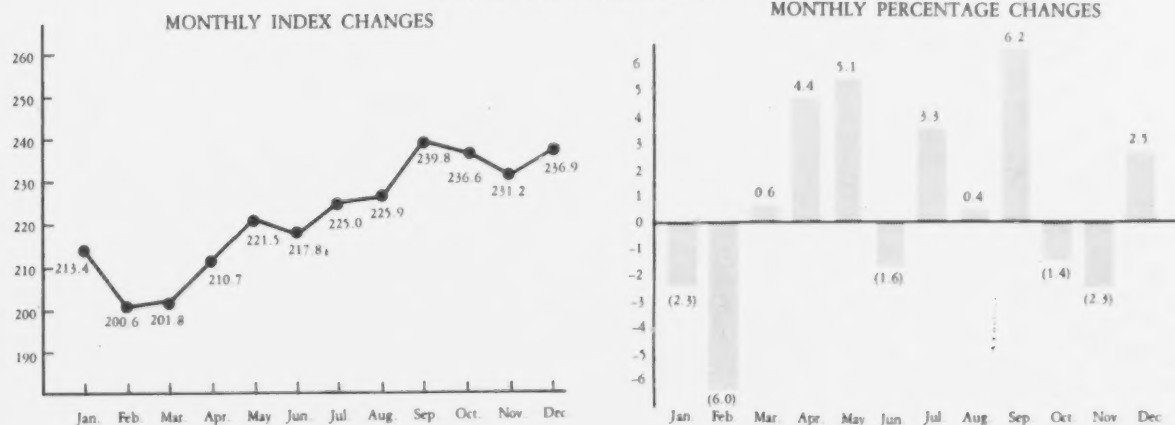
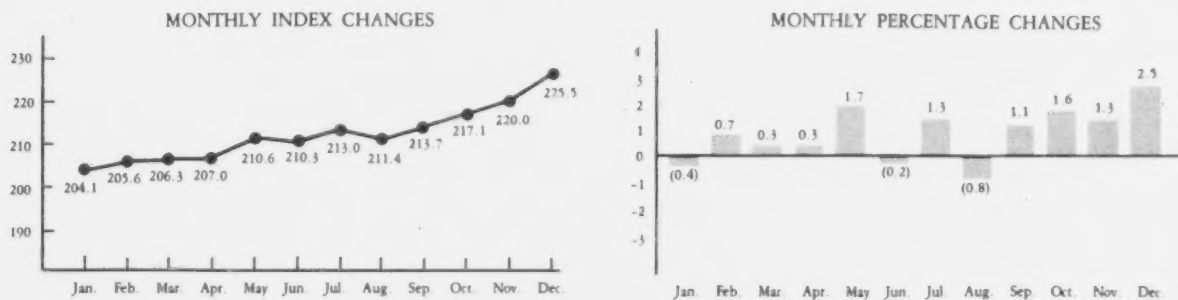


FIGURE I (Continued)
 INDEX OF FOOD AT HOME COSTS:
 MONTHLY CHANGES IN MARICOPA COUNTY, 1980
 (Average 1967 = 100)

FRUITS AND VEGETABLES



DAIRY PRODUCTS



MEATS, POULTRY, FISH, AND EGGS

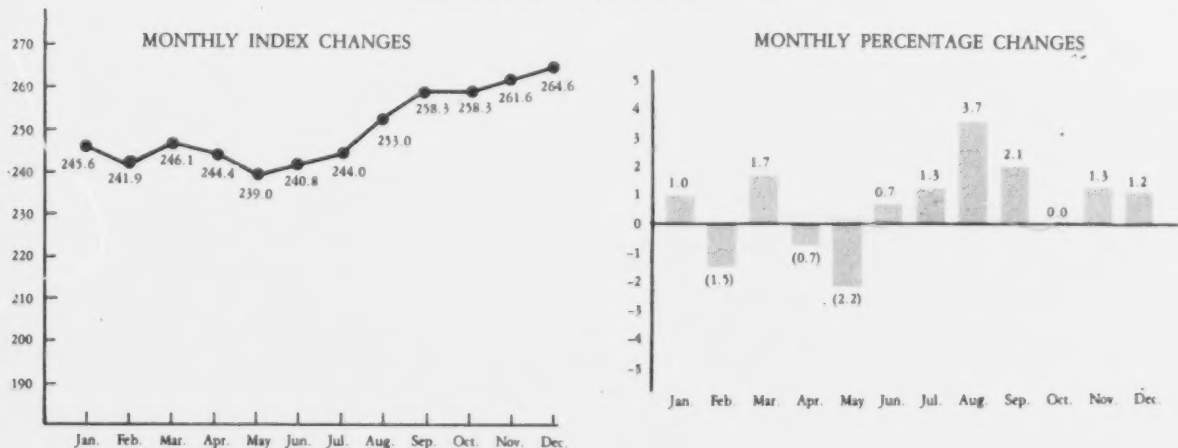


TABLE 2
FOOD PRICE CHANGES: 1979-1980
MARICOPA COUNTY
(December, 1978 = 100^a)

	Index Averages		Percent
	1979	1980	Change
Total Food Consumed at Home	—	—	9.5
Cereals and Bakery Products			
Cereal and Cereal Products . . .	103.3	116.9	13.1
Bakery Products	105.5	117.9	11.8
Meats, Poultry, Fish, and Eggs			
Beef	115.1	120.6	4.7
Pork	98.9	98.3	-.6
Other Meats	108.4	109.4	1.0
Poultry	104.7	108.5	3.6
Fish and Seafood	106.1	114.7	8.1
Eggs	105.2	107.7	2.4
Dairy Products			
Fresh Milk and Cream	108.2	117.0	8.1
Other Dairy Products	107.9	120.6	11.8
Fruits and Vegetables			
Fresh Fruits	107.4	106.0	-1.4
Fresh Vegetables	107.6	133.8	24.4
Processed Fruits	103.8	107.9	4.0
Processed Vegetables	103.7	110.0	6.0
Other Foods			
Sugar and Other Sweets	105.1	124.7	18.6
Fats and Oils	102.3	109.9	7.2
Nonalcoholic Beverages	105.4	122.5	16.2
Misc. Prepared Foods	105.8	117.8	11.4

^aDetailed indexes for subgroups were not computed prior to December, 1978; therefore these index values are not comparable with index figures for main food groups as shown in Tables 1 and 3, which have a 1967 base.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

the other hand, rose significantly during the July-December period in response to reduced production during the 1980 crop year. Acreage in production declined about 12 percent and the raw tonnage of vegetable crops in the last crop year dropped about 15 percent below 1979 totals.

Reflecting tightening conditions in the world sugar market, the farm price of sugar increased dramatically in 1980 — to an average of 37-38 cents per pound from a price of 25 cents per pound in 1979. This rise in a key ingredient in many food products (cereals and bakery items, ice cream, sweets, soft drinks, and many other

processed foods) was a significant factor in higher retail food prices during the past year.²

Food marketing costs, which comprise about two-thirds of the retail price of domestically produced foods, rose 11 percent in 1980, compared with a 12 percent increase in 1979. Labor costs, the largest component of marketing costs, (comprising about 46 percent of the total) rose 10 percent in 1980 — about the same magnitude of increase experienced in 1979. Packing costs (12 percent of the total) jumped 16 percent in 1980 compared with a 13 percent rise in 1979. Most of the increase occurred in the first half of the year reflecting sharply higher input prices for paper and paper-board products and for plastic products. Transportation accounts for about 8 percent of total market costs, and due to the effects of higher shipping rates preliminary estimates show transportation costs up 15 percent during 1980. As food marketing costs rose last year, the ratio of profits to sales for food processing, distribution, and marketing firms fell compared with 1979. A combination of higher input prices and a squeeze in the farm-to-retail price spread during the second half of the year (due to rapidly increasing farm-level food prices) hurt the profitability of food marketing firms in 1980.³

Coffee, sugar, bananas, and fish comprise the four major food commodities in the fish and imported foods category. Although purchases of foods in this category account for less than one-fifth of total retail food expenditures, many of the commodities are subject to wide price swings, and recent history has shown that these products can have significant impacts upon retail food prices. Prices of these imported foods rose at double-digit rates during the first half of 1980 — primarily the previously mentioned sharp rise in world sugar prices. These price increases were moderated somewhat in the second half of the year by falling coffee prices.⁴

COMPARISON OF MARICOPA COUNTY WITH OTHER AREAS

A comparison of the average food price changes in Maricopa County with those experienced in the United States and various metropolitan areas is helpful in assessing the impact of the increase in Maricopa County. The food price indexes for the United States, the Los Angeles area, and the Chicago area are presented in Table 3 and are useful in making comparisons concerning the rates of change between areas. However, they may not be used to compare the absolute price levels because the indexes in each city were set at 100.0

TABLE 3

1980 PERCENTAGE CHANGES IN FOOD PRICE INDEXES FOR MARICOPA COUNTY,
THE UNITED STATES, AND SELECTED METROPOLITAN AREAS
(1967 Average = 100)

Location	Total Food Consumed At Home	Cereals and Bakery Products	Meats, Poultry, Fish, and Eggs	Dairy Products	Fruits and Vegetables	Other Foods
Maricopa County						
Average 1980 Index	241.7	229.3	249.8	212.1	221.8	269.1
Average 1979 Index	220.7	204.4	241.3	193.4	201.9	235.8
1980 Percentage Change	+ 9.5	+ 12.2	+ 3.5	+ 9.7	+ 9.9	+ 14.1
United States						
Average 1980 Index	251.5	246.4	242.2	227.4	246.7	301.9
Average 1979 Index	232.9	220.1	234.2	207.1	230.0	269.6
1980 Percentage Change	+ 8.0	+ 11.9	+ 3.4	+ 9.8	+ 7.3	+ 12.0
Los Angeles ^a						
Average 1980 Index	250.1	253.9	243.1	220.6	236.8	298.5
Average 1979 Index	229.4	222.9	236.3	191.9	220.5	263.9
1980 Percentage Change	+ 9.0	+ 13.9	+ 2.9	+ 15.0	+ 7.4	+ 13.1
Chicago ^b						
Average 1980 Index	253.5	253.4	248.7	221.8	250.6	304.6
Average 1979 Index	234.9	222.9	239.4	204.9	235.5	273.2
1980 Percentage Change	+ 7.9	+ 13.7	+ 3.9	+ 8.2	+ 6.4	+ 11.5

^aLos Angeles-Long Beach SMSA

^bChicago-Northwestern Indiana SMSA

Sources: Compiled from data published in *Arizona Business*, Bureau of Business and Economic Research, College of Business Administration, Arizona State University; and U.S. Department of Labor, Bureau of Labor Statistics, The Consumer Price Index.

in 1967; absolute food costs across the country were not necessarily equal at the time.

Average food prices in 1980 across the nation rose 8.0 percent according to the United States index, which is based upon prices in eighty-five representative urban areas. In comparison, prices in Maricopa County rose at the faster rate of 9.5 percent. Furthermore, Maricopa County does not fare well when compared to Los Angeles, where prices rose by an average of 9.0 percent, or when compared to the Chicago area, where prices rose 7.9 percent during 1980.

An examination of the price increases for the five major food groups does not produce a clear pattern when the Phoenix area statistics are compared with the other areas. For example, the percentage increase in *Cereals and Bakery Products* for the Phoenix area was slightly larger than that of the United States as a whole but smaller than the increase in the two reference cities. In general, however, it appears that the price experience for the five food groups was consistent with the pattern observed for the overall index — the rate of inflation for

retail food prices in the Phoenix area was somewhat higher than that experienced in the nation as a whole and in the Chicago area but about equal with food price increases in the Los Angeles area.

THE OUTLOOK

It is not likely that retail food prices in 1981 will continue to moderate the rate of inflation experienced by other categories of consumer expenditures. Because of expected big increases in farm food prices, U.S. Department of Agriculture (USDA) economists predict that food prices will increase 10 to 15 percent during 1981.³ All major food groups are expected to experience significant price increases, but the primary source of inflation is predicted to come from big jumps in the prices of meats, poultry, and eggs.

Prices paid to farmers are forecast to rise 12 to 20 percent above the low prices received by producers for many food commodities during 1980. Reduced meat supplies could produce record high cattle prices by the

second quarter of 1981. As consumers substitute more poultry and eggs in response to higher meat prices, the increased demand will also lead to substantial price increases for these foods. Most fruit prices are forecast to rise only moderately during 1981, but smaller supplies of many vegetables are predicted to result in bigger price increases this year than in 1980. Drought-damaged yields and reduced acreage resulted in lower production of the major oilseeds (soybeans, peanuts, cottonseed, sunflower), which will lead retail prices of fats and oils to rise more sharply in 1981 following the relatively modest increases of 1980. Sugar prices are also expected to show another substantial rise, since world sugar production is expected to be less than consumption for the second consecutive year.⁶ The large farm price increases will, of course, lead to significant jumps in the retail prices of these commodities and related processed goods. For example, processed fruit and vegetable prices are likely to rise faster in 1981 than in 1980, and higher sugar prices will raise prices of sweets, soft drinks, cereals, and some bakery products.

Most other food prices will increase in line with the general inflation rate — primarily affected by higher food marketing costs. Overall, such marketing costs are forecast by USDA economists to rise 9 to 11 percent in 1981. Labor costs are expected to increase more rapidly this year due partly to higher Social Security taxes and a jump in the minimum wage rate from \$3.10 to \$3.35 in January. However, packaging, transport, and other costs are predicted to rise more slowly than the big increases that occurred in 1980.⁷

The food price experience in January and February of 1981 has been consistent with the USDA forecasts. Retail food prices in the Phoenix area have increased at a 12 percent annual rate during the first two months of the year. The overall inflation rate is predicted to decline from record levels in 1980, and the hope is that good crop conditions during 1981 will moderate the current spurt in food prices so that the annual rate of increase in retail food prices will remain below 10 percent again in 1981.

¹An explanation of food price index calculation that can be found in Jerry L. Kingston, "Maricopa County Food Costs: The 1970 Record," *Arizona Business Bulletin* 18, (April, 1971), p. 8. For a discussion of the revisions to this methodology incorporated into the index in January, 1979, see Timothy D. Hogan, "The 1979 Consumer Price Index: Its Background and Significance," *Arizona Business*, 27 (March, 1980), p. 5.

²U.S. Department of Agriculture, *Agricultural Outlook*, December, 1980, pp. 5-10.

³U.S. Department of Agriculture, *Agricultural Outlook*, November, 1980, pp. 14-15.

⁴U.S. Department of Agriculture, *National Food Review*, Fall,

1980, pp. 4-6.

⁵U.S. Department of Agriculture, *Agricultural Outlook*, December, 1980, p. 12.

⁶*Ibid.*, pp. 12-14.

⁷U.S. Department of Agriculture, *National Food Review*, Fall, 1980, pp. 4-6.

⁸The assistance of the Bureau's Research Specialist Tom Rex and of Clifford Armstrong, Susan Baerst, Maria Hesse, David Jones, Lori Lieberman, Chris Lockwood, James Robertson, Cynthia Weigand, and Carol Zimmerman in the compilation of the Food Price Index during 1980 is acknowledged with appreciation.

Construction Activity in Transition: 1980

JAY Q. BUTLER

If one term could describe construction activity in Arizona for 1980, the term would be "volatile." Although the residential sector continued downward during the year, the commercial and industrial posted relatively strong levels of activity. (See the 1980 year-end Report on pages 24-26.)

The Arizona construction industry is beginning 1981 on a soft and uncertain note with several problems still unresolved. Continued high interest rates and inflation stifle any real and continuing strength in the Arizona construction industry. While recovery is expected eventually, the 1981 market will likely be slow early in the year but should improve toward the latter half of the year. This pattern is based on the expectation of decreasing interest rates and an improving economy.

SECTORAL CHANGES

Total construction activity reported in Arizona was 86,101 permits valued at \$2.39 billion. This level of ac-

Construction Activity during 1980 was highlighted by a surge in industrial permits, but a dramatic decline in the residential sector.

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tivity represents a 20 percent decrease from the 107,243 permits of 1979 and a 9 percent decline in dollar value from the \$2.62 billion of the preceding year. In Maricopa County, total reported permits declined 22 percent (59,963 to 46,392 permits) with an 8 percent decline in dollar value (\$1.62 billion to \$1.49 billion). Because residential construction represents a permit of relatively low value, its decline is reflected more in the dramatic drop in number of recorded permits than in total dollar value, which was supported by continued commercial and industrial activity and thus showed a less significant decrease.

Table 1 provides a perspective on construction activity by counties for 1979 and 1980. Only Yuma County reported any increase in residential activity. Three counties — Gila, Navajo, and Pima — reported increases in commercial activity. The major area of improvement was the industrial sector with reported increases in Gila, Maricopa, Yavapai, and Yuma counties. Due largely to the decline in residential construction activity, only Coconino, Gila, Greenlee and Yavapai reported increases in total construction activity. Even these increases were not significant because they were due largely to a single project such as the \$21.2 million water treatment plant in Flagstaff.

The balance of activity in Maricopa County remained similar to 1979 with 54 percent of the state's total recorded permits and 62 percent of total reported dollar value in Arizona. Pima County accounted for 20 percent of the total issued permits and 19 percent of recorded dollar value. In combination, the two metro-

TABLE 1

ARIZONA BUILDING PERMIT ACTIVITY: 1979 and 1980

	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE COUNTY 1980	141	2,235,273	14	1,179,390	1	100,000	12	173,800	168	3,688,463
1979	202	3,462,363	23	819,800	1	89,000	16	208,625	242	4,579,788
Percent Change	-30	-35	-39	-44	—	-12	-25	-17	-51	-19
COCHISE COUNTY 1980	1,356	26,433,150	59	3,379,566	5	151,790	1,216	3,384,670	2,636	33,349,176
1979	1,868	31,660,041	68	6,441,208	8	743,600	1,139	6,030,827	3,083	44,875,676
Percent Change	-27	-17	-13	-48	-38	-80	7	-44	-15	-26
COCONINO COUNTY 1980	1,795	38,588,425	113	11,410,356	7	350,992	485	25,368,318	2,400	75,718,091
1979	1,530	39,568,341	170	21,301,184	7	810,875	471	4,334,070	2,178	66,014,470
Percent Change	17	-3	-34	-46	—	-57	3	472	10	13
GILA COUNTY 1980	848	10,961,401	49	3,030,669	4	406,243	260	4,541,738	1,161	18,940,051
1979	993	12,321,936	55	1,316,185	1	25,000	326	2,360,543	1,355	16,023,664
Percent Change	-15	-11	-40	130	300	1,524	-20	92	-16	18
GRAHAM COUNTY 1980	463	6,877,090	42	4,328,157	3	156,000	55	3,232,772	563	14,594,019
1979	545	6,827,806	46	3,381,309	—	—	100	1,521,914	642	14,672,605
Percent Change	-15	1	-9	28	—	—	-45	112	-12	-1
GREENLEE COUNTY 1980	22	533,750	—	—	1	10,000	3	1,500	26	545,250
1979	19	399,672	2	23,000	—	—	3	105,002	24	527,674
Percent Change	16	33	—	—	—	—	—	-98	8	3
MARICOPA COUNTY 1980	24,008	559,381,766	2,066	485,939,949	560	159,706,038	19,753	284,095,021	46,387	1,489,122,774
1979	32,990	751,562,454	2,207	464,555,779	512	128,181,526	24,254	279,252,629	59,995	1,623,552,388
Percent Change	-27	-26	-6	5	—	25	-19	2	-23	-8
MOHAVE COUNTY 1980	4,119	57,735,974	253	18,757,287	4	823,786	2,259	4,725,372	6,695	82,042,419
1979	6,964	71,917,203	227	21,580,675	2	211,536	732	3,134,167	7,945	96,843,581
Percent Change	-41	-20	11	-13	100	289	200	51	-16	-15
NAVAJO COUNTY 1980	1,058	18,002,953	61	3,326,801	7	39,584	95	1,998,807	1,221	23,368,145
1979	1,243	23,591,870	72	2,265,449	—	—	608	265,197	1,923	26,122,516
Percent Change	-15	-24	-15	47	—	—	-84	654	-36	-10
PIMA COUNTY 1980	10,517	227,856,558	579	194,668,416	11	3,739,146	5,604	52,752,429	16,711	479,016,549
1979	15,732	271,010,555	558	172,664,523	28	43,488,616	4,646	66,158,396	20,964	553,322,090
Percent Change	-33	-16	4	13	-61	-91	21	-21	-20	-13
PINAL COUNTY 1980	1,211	14,357,491	59	2,613,287	7	2,367,500	511	4,157,000	1,788	23,495,278
1979	1,470	15,204,181	69	3,342,475	5	2,978,528	535	1,898,504	2,079	23,423,688
Percent Change	-18	-6	-14	-22	-40	-21	-5	118	-14	—
SANTA CRUZ COUNTY 1980	165	6,571,519	3	142,196	1	725,000	38	624,786	207	8,063,501
1979	290	9,026,253	8	237,500	4	825,000	67	535,481	369	10,624,234
Percent Change	-43	-27	-63	-40	-75	-12	-43	17	-44	-24
YAVAPI COUNTY 1980	2,629	53,925,349	154	10,923,956	18	15,317,220	926	7,140,131	3,727	87,306,656
1979	2,863	59,657,339	111	15,710,112	14	413,440	875	3,646,792	3,863	79,427,683
Percent Change	-8	-10	38	-30	29	3,604	6	96	-4	9
YUMA COUNTY 1980	1,946	34,333,747	99	10,680,550	7	1,774,434	419	6,210,533	2,471	52,999,624
1979	1,870	32,714,288	111	12,587,720	19	677,390	607	14,922,931	2,607	60,902,329
Percent Change	4	5	-11	-15	-63	162	-31	-58	-5	-13

* Includes mobile homes.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

politan counties represented 73 percent of the reported permit activity and 82 percent of the recorded dollar value. While the percentages have remained constant for several years, Table 1 shows that commercial and industrial development is occurring and even increasing in the other counties, which is important for the balanced economic development of Arizona.

Residential

Like 1979, much of the reported decline occurred in the residential sector. For the entire state of Arizona, 50,278 residential permits were recorded in 1980, representing a 27 percent decline from the 68,579 permits of 1979. A 20 percent decrease occurred in the dollar value of residential construction activity (\$1.33 billion to \$1.06 billion). In 1978, 60 percent of residential permits were issued for single-family units, but this percentage declined to 57 percent in 1979 and 53 percent in 1980. This trend represents increased remodeling activity in response to higher new home costs. Thus, new

home construction (including mobile homes) reported a 33 percent decrease from 44,542 permits to 30,050 permits.

In Maricopa County, the residential downturn continued with the 14,879 single-family permits representing a 38 percent decline from the 24,128 permits of 1980. Total residential permit activity in the county was down 27 percent (32,990 to 24,008 permits) while dollar value was down 26 percent (\$751.6 million to \$559.4 million).

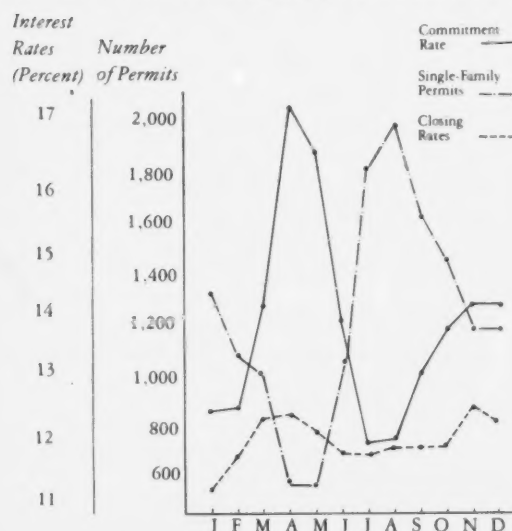
In the boom year of 1978, residential activity represented 62 percent of all recorded permits in Maricopa County while in 1980 this percentage had declined to 51 percent, which was typical of previous years' activity. Because Maricopa County is growing, residential construction will be the dominant sector. However, construction activity needs to be evenly balanced to fully serve the economic development of Maricopa County.

Several factors have been identified that have adversely affected the new home construction area including inflation, high interest rates, increasing new

home prices, and eroding consumer confidence. Not only were interest rates high during 1980, they were also very volatile. This combination of volatility and high interest rates created a great deal of uncertainty and lack of market activity.

Figure I shows the relationship between new home construction activity in Maricopa County and interest rates for conventional mortgages. The interest rates were derived from the monthly survey conducted by the Federal Home Loan Bank Board and represent the contract rate (interest rates on mortgages closed during the period) and the commitment rate (a future rate based on a 25 year 75 percent loan-to-price mortgage). Because construction activity increased in response to declining interest rates, Figure I tends to confirm the common expectation that housing activity will surge when interest rates decline and hold steady around the 12 percent level.

FIGURE I
1980 SINGLE FAMILY CONSTRUCTION AND
INTEREST RATES, MARICOPA COUNTY



Source: News, Federal Home Loan Bank Board.

Commercial

While the residential sector continued to decline, the commercial sector basically held its own in the face of high interest rates and a weakening economy. In Maricopa County, the number of permits declined 6 percent (2,207 to 2,066) while dollar value increased 4 percent (\$464.6 million to \$485.9 million).

Due to the dominance of the residential sector, commercial activity in Maricopa County tends to de-

crease when residential activity is extensive. This is due to a limited supply of labor and materials which are siphoned off by residential development. As an example, there were 18,013 residential permits and 2,232 commercial permits in 1975; but, in 1978, when the number of residential permits had increased to 41,032 permits, the commercial sector declined to 1,925 permits.

Furthermore, the number of apartment permits (5 or more units) has declined to 387 permits from 515 permits in 1979. While the number of permits has been declining, the number of actual housing units per permit has been increasing from fourteen housing units per permit in 1971 (716 permits) to twenty-five housing units per permit (387 permits) in 1980. The decline in apartment development can be attributed to decreasing occupancy levels and stagnant rent levels while operating expenses have increased. Due to continued population growth and low levels of single-family construction, demand for apartment units could increase over the next few years. There is an increasing problem in whether the units can be profitably produced and operated. In response to this problem, development by larger firms has increased, prices on the purchase of existing units have increased, and condominium conversions continue to be a potential alternative.

The major growth areas in the commercial sector have been in office space and retail space because of increased demand, especially in Maricopa County, generated by growth in both the population and the economic base. Furthermore, the use of percentage leases or other forms of escalating leases that permit rent increases provide economic incentive to meet the demand.

In the rest of the state, commercial activity declined; a 1 percent decrease occurred in the number of issued permits (1,500 to 1,485 permits) and an 11 percent decrease in dollar value (\$297.7 million to \$264.4 million). Pima County had a 4 percent increase in issued permits (558 to 579) and an 11 percent increase in dollar value (\$172.7 million to \$194.7 million). As in Maricopa County, much of the increase can be attributed to office and retail space. Apache, Gila and Navajo counties also posted increases in commercial development, especially in the retail area.

Industrial

The highlight of the 1980 construction year was the industrial sector. In Maricopa County, industrial development set a record with 560 permits (a 9 percent increase from the 512 permits of 1979) valued at \$159.7 million (a 25 percent increase from the \$128.2 million

of 1979). Construction of warehousing, which traditionally has dominated the industrial sector, continued to be an important element. However, new manufacturing plants and plant additions have been increasing in number over the past few years, reflecting the changing industrial profile of the state. The main geographic areas of development have been Chandler, especially the Williams Field Road area; Phoenix, around the airport and the north area of the Black Canyon Freeway; and Tempe, around University Drive and the Maricopa Freeway area.

The fact that a single industrial project can have a significant impact on the building permit activity is illustrated by permit activity recorded for the rest of the state, which showed a decline with a 13 percent decrease in permit activity (89 to 76 permits) and a 48 percent downturn in dollar value (\$50.3 million to \$26.0 million). Much of this downturn can be attributed to the 91 percent (\$43.5 million to \$3.7 million) decrease in Pima County because in 1979, extensive development was shown for the IBM plant, which was not carried over to 1980.

As seen in Table 1, Apache, Gila, Mohave, Yavapai, and Yuma Counties all posted increases in the industrial sector. However, many of the increases were due to single projects such as a \$10 million plant in Yavapai County. Most counties still do not have the economic base to sustain high levels of new industrial development.

Other

This sector includes development activity for such areas as public housing and buildings, fences, permit renewals, and swimming pools. It is very sensitive to governmental activity, which is very important in providing the support services for economic growth and jobs in a weakening construction market. Maricopa County showed a 19 percent decrease in issued permits (24,254 to 19,753 permits) and a 2 percent increase in dollar value (\$279.3 million to \$284.1 million). The increase in dollar value is largely due to a \$14 million water treatment plant. For the rest of Arizona, the 11,883 permits represent a 17 percent increase from the 10,096 permits of 1979 and a 6 percent increase in dollar value (\$108.1 million to \$114.3 million). Again, the increase in dollar value can be attributed to a \$21.2 million water treatment plant in Flagstaff.

OUTLOOK FOR 1981

While volatility was the keynote of 1980, inconsistency and uncertainty appear to be the theme of a tran-

sitional 1981 construction and real estate market. Members of the real estate industry have often confronted such uncertainty as they planned for the new year, but seldom has the future seemed so nebulous as the outlook for 1981. The past year will be remembered for rising interest rates, continuing inflation, and a recession but there is no definitive concept of what 1981 will be like for the real estate market. It is viewed primarily as a year of transition between the recession of 1979-1980 and the anticipated strength of 1982.

Experts still disagree about the prospects for 1981 because the recent statistical information is inconclusive and the final form and impact of the recently announced economic strategy of President Reagan's administration are unknown. While the national economy is expected to recover from the short recession of 1980, the recovery is expected to be slow throughout the first half of 1981. The consensus calls for an irregular decline in interest rates throughout 1981, a reflection of economic growth still being stifled by high inflation.

Not only were interest rates high during 1980, they were very volatile as shown in Figure 1. The prime interest rate changed forty-two times, fluctuating from a high of 20 percent down to 11.5 percent in the fall, and back up to 21 1/2 percent at year end. The FHA/VA interest rate changed a record eight times during 1980.

Due to limited liquidity, consumers have been fairly cautious throughout the year and have spent most of their funds in reducing debt, not in creating additional debt. They also have seen prices rise as fast as income and they have experienced increased Social Security tax, which is taking additional household income. Due to these economic factors, consumer confidence and willingness to make major purchases have been declining. Thus, the consumer is expected to be very cautious until the economy is perceived as definitely improving. However, liquidity has been increasing and could boost the economy when interest rates decline enough to allow the consumer once again to borrow money.

The role of the federal government is still not definite. The Federal Reserve appears to be continuing its tough posture until a decrease is evident in the demand for funds or inflation rates. Some experts are concerned about possible conflict between increased Treasury borrowing and Federal Reserve credit curbs. The result of this conflict would be higher, not lower, interest rates.

The key to the future economic trend is precisely how much the new administration will be able to hold down federal spending and cut taxes. The recently announced economic program calls for both decreased federal spending, except in the area of defense, and tax

benefits that would include a tax cut and reduced useful life for new construction. If the program achieves its goal, the benefits of reduced inflation, increased capital availability, and liberalized depreciation rules would support a tremendous surge in construction activity.

While the future condition of the national economy is still largely unknown, the local economies of Arizona and Maricopa County are in fairly good shape. Unemployment is not expected to increase significantly and population and economic development is expected to continue. Because interest rates are expected to fall, the industry could experience considerable difficulty in supplying new projects, especially housing, for the new economic and population growth. This pent-up demand in all aspects of the market should provide a tremendous resurgence once interest rates decline and stabilize and the economy becomes stronger.

In the latter part of 1980, Phoenix Magazine Inc. and the Arizona Real Estate Institute surveyed members of three real estate industry groups: financial institutions (banks, savings and loan associations, and mortgage bankers), real estate firms (residential brokerage, commercial brokerage, and property management), and homebuilders. In addition, the general public was surveyed at shopping areas throughout the Valley.

The industry groups appear to be fairly optimistic concerning 1981. Over 60 percent of the respondents in the industry groups expect improvement in consumer confidence, in retail sales, and in the local and national economies. The general public, however, is more cautious concerning 1981 for they expect their household

financial condition and the local and national economies to be much the same as they are now.

In response to expected changes in price levels, the industry respondents tended to agree that new home prices, resale home prices, and land prices will each increase 10 to 11 percent over the coming year. Homebuilders expect housing starts to be in the range of 20,000 to 24,999 units and 15,000 to 19,999 closings. Furthermore, the homebuilders foresee starts and closings increasing around 20 percent for their respective firms. The financial institution group and real estate group also expect a comparable increase in their area of activity. Overall, the industry groups foresee the 1981 market as being slow early in the year but improving toward the latter half of the year.

Table 2 presents the mode (most common) and mean (average) response for each of the surveyed groups relative to a selected set of economic indicators. The last column provides a consensus concerning the various indicators. It appears that all groups expect reasonable improvement but no dramatic changes.

The general expectation is that 1981 will be a year of recovery with interest rates declining to more acceptable levels, inflation decreasing, and construction activity increasing. Because of the expected slowdown and the impact of the new economic strategy, market activity should be weak during the first half of 1981 with stronger recovery during later quarters. The strengthening of the economy should be more evident in late 1981 and should sustain a strengthening real estate market in 1982.

TABLE 2
COMPARISON OF RESPONSES
FOR 1981 ECONOMIC INDICATORS
(Percentages)

Economic Indicators	Public		Homebuilders		Financial		Real Estate		Consensus	
	Mode	Mean	Mode	Mean	Mode	Mean	Mode	Mean	Mode	Mean
Conventional Mortgage Rate	12.0	13.1	13.0	12.8	12.0	12.3	12.0	12.7	12.0	12.9
FHA Mortgage Rate	12.0	12.0	12.0	11.9	11.5	11.6	11.5	11.9	12.0	11.9
Prime Interest Rate	15.0	13.8	12.0	12.1	10.0	10.8	12.0	12.5	12.0	12.5
Inflation Rate	10.0	11.4	10.0	11.2	10.0	9.6	10.0	11.2	10.0	11.2
Apartment Vacancy Rate	NA	NA	5.0	7.5	3.0	5.8	5.0	7.2	5.0	7.1
Commercial Interest Rate	NA	NA	14.0	13.6	12.0	12.4	14.0	14.0	14.0	13.6
Treasury Bill Rate	NA	NA	11.0	10.7	9.5	9.7	9.0	10.8	9.5	10.6

NA: Not asked; Mode = most common response; Mean = average response.

Source: Surveys conducted by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

Arizona Building Permits: Year-End Report

1980	RESIDENTIAL*			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	
APACHE COUNTY															
Eagar	141	2,239,273	14	1,179,390	1	100,000	12	173,800	168	3,688,463	36	2,363,200	—	—	
St. Johns	30	1,095,200	3	1,067,000	—	—	—	—	48	—	—	—	—	—	
Springerville	47	—	—	—	—	—	—	—	20	—	—	—	—	—	
Unincorporated Apache County															
Benson	1,356	1,140,073	7	112,390	5	151,790	9	72,800	64	1,325,263	2,636	33,349,176	—	—	
Bisbee	58	26,433,150	59	3,379,566	—	—	1,216	3,384,670	124	1,383,207	124	1,383,207	—	—	
Douglas	156	814,927	5	453,800	—	—	61	114,480	245	597,155	245	597,155	—	—	
Huachuca City	121	331,402	4	83,500	—	—	85	182,253	303	5,216,455	303	5,216,455	—	—	
Sierra Vista	62	3,718,982	5	1,000,459	—	—	177	497,014	69	445,763	69	445,763	—	—	
Tombstone	405	311,985	2	104,000	1	6,078	4	23,700	1,093	11,196,572	1,093	11,196,572	—	—	
Unincorporated Cochise County															
Willcox	35	8,821,349	15	1,091,557	—	—	673	1,283,666	78	222,835	78	222,835	—	—	
Unincorporated Coconino County	454	122,300	6	72,850	—	—	37	27,685	630	13,057,447	630	13,057,447	—	—	
Flagstaff	65	11,443,813	15	353,900	3	46,500	19	95,350	94	1,229,742	94	1,229,742	—	—	
Fredonia	1,795	868,392	7	219,500	7	350,992	485	25,306,318	2,400	75,718,091	2,400	75,718,091	—	—	
Page	451	38,588,425	113	11,410,356	261	24,854,852	802	47,888,634	51	494,258	51	494,258	—	—	
Unincorporated Coconino County	208	16,785,878	87	6,037,662	3	137,750	78	115,800	294	2,571,374	294	2,571,374	—	—	
Williams	1,083	313,908	2	12,500	—	—	50	282,559	1,149	24,451,443	1,149	24,451,443	—	—	
Globe	24	2,320,799	16	5,218,419	—	—	79	85,007	104	312,382	104	312,382	—	—	
Hayden	848	18,950,465	49	3,030,669	4	406,243	260	4,541,738	1,161	18,940,051	1,161	18,940,051	—	—	
Miami	78	10,961,401	3	375,000	1	200,000	36	1,133,200	118	2,455,750	118	2,455,750	—	—	
Payson	17	72,273	—	—	—	—	3	600	20	72,873	20	72,873	—	—	
Unincorporated Gila County	35	155,010	1	25,000	—	—	4	5,200	40	185,210	40	185,210	—	—	
Pima	302	2,494,354	28	1,599,224	2	169,243	180	308,101	512	4,570,922	512	4,570,922	—	—	
Safford	416	7,492,214	17	1,031,445	3	156,000	37	3,094,637	563	14,594,019	563	14,594,019	—	—	
Thatcher	463	6,877,090	42	4,328,157	—	—	55	3,232,772	15	274,890	15	274,890	—	—	
Unincorporated Graham County	15	274,890	—	—	3	156,000	35	256,222	194	2,657,569	194	2,657,569	—	—	
Clifton	131	1,452,865	25	830,482	—	—	17	2,638,550	104	7,433,950	104	7,433,950	—	—	
Duncan	81	1,720,400	6	3,075,000	—	—	3	376,000	250	4,227,610	250	4,227,610	—	—	
Unincorporated Greenlee County	236	3,428,935	11	422,675	1	10,000	3	1,500	26	545,250	26	545,250	—	—	
Avondale	22	533,750	—	—	—	—	—	—	4	60,000	4	60,000	—	—	
Buckeye	4	60,000	—	—	1	10,000	2	900	8	23,850	8	23,850	—	—	
Chandler	5	460,800	—	—	1	10,000	2	600	14	461,400	14	461,400	—	—	
El Mirage	13	559,381,766	2,066	485,939,949	560	159,706,038	19,753	284,095,021	46,387	1,489,122,774	46,387	1,489,122,774	—	—	
Gila Bend	24,008	582,683	10	459,112	2	59,000	138	1,264,206	206	2,365,001	206	2,365,001	—	—	
Glendale	56	527,214	5	1,145,800	1	200,000	29	632,074	91	2,505,088	91	2,505,088	—	—	
Gilbert	1,656	40,385,345	45	2,774,985	21	18,071,032	1,877	12,900,825	3,599	74,132,187	3,599	74,132,187	—	—	
Goodyear	12	126,326	1	150,000	—	—	—	—	13	276,326	13	276,326	—	—	
Guadalupe	10	87,600	3	650,000	—	—	4	5,100	17	742,700	17	742,700	—	—	
Mesa	144	4,454,292	6	1,735,592	7	1,361,500	296	2,732,807	453	10,284,191	453	10,284,191	—	—	
Peoria	1,572	38,703,471	186	20,705,000	3	3,171,000	2,219	7,656,179	3,980	70,235,650	3,980	70,235,650	—	—	
Phoenix	—	—	7	2,253,663	1	1,395,228	131	1,141,040	139	4,789,931	139	4,789,931	—	—	
Scottsdale	21	151,473	—	—	4	2,880	25	154,553	25	154,553	25	154,553	—	—	
Surprise	2,252	39,575,872	254	64,113,906	22	8,805,452	3,022	41,081,262	5,550	153,576,492	5,550	153,576,492	—	—	
Tempe	314	16,054,135	1	99,500	313	2,816,042	628	18,969,677	610	8,999,718	610	8,999,718	—	—	
Tolleson	341	6,062,736	20	1,088,063	7	659,564	242	1,189,355	15,444	724,755,532	15,444	724,755,532	—	—	
Unincorporated Maricopa County	7,907	220,971,332	723	269,297,963	204	78,850,843	6,610	155,635,394	4,134	129,093,096	4,134	129,093,096	—	—	
Wickenburg	1,489	56,559,835	195	55,662,018	2	1,577,704	58	1,857,223	116	2,260,113	116	2,260,113	—	—	
Youngtown	55	282,890	3	120,000	288	44,879,715	22	40,072	96	312,939	96	312,939	—	—	
Unincorporated Maricopa County	1,416	24,529,900	345	35,149,600	2	675,000	1,598	26,307,474	8,184	165,512,705	8,184	165,512,705	—	—	
Wickenburg	6,326	108,482,684	258	30,047,547	2	675,000	54	3,355,099	62	1,262,211	62	1,262,211	—	—	
Youngtown	255	928,161	2	39,000	—	—	54	3,355,099	310	1,426,249	310	1,426,249	—	—	
		643,150	1	448,000	—	—							—	—	

Arizona Building Permits: Year-End Report (Continued)

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits
MOHAVE COUNTY	4,119	57,735,974	253	18,757,287	4	823,786	2,259	4,725,372	6,635	82,042,419					
Kingman City	273	5,779,819	45	2,821,640				173,575	390	8,775,034					
Kingman Area	616	5,916,414	18	1,237,426				433,581	1,043	7,621,273					
Lake Havasu City	729	21,452,024	63	7,989,398	1	33,852		1,556,430	1,049	31,787,806					
Lake Havasu Area	177	1,545,238	2	31,440	3	789,934		1,776,936	285	1,753,614					
Mohave Valley North	1,393	13,589,363	88	5,023,657				1,485,169	2,315	20,908,189					
Mohave Valley South	600	6,057,239	26	1,312,182				538,638	977	7,908,059					
Dolan Springs	146	1,289,809	3	54,672				188,126	238	1,532,607					
Sacramento Valley	137	1,414,473		120,000				107,663	247	1,642,136					
Mohave County General	48	691,595	7	166,872				65,234	71	923,701					
NAVAJO COUNTY	1,058	18,002,953	61	3,326,801	7	39,584		1,998,807	1,221	23,368,145					
Holbrook	52	1,151,300	2	185,000				352,920	65	1,689,220					
Show Low	106	1,016,117	10	591,986				268,238	132	1,876,341					
Snowflake	33	606,300	1						44	606,300					
Taylor	27	14,108,586	40	1,915,315				402,365	27	16,465,850					
Unincorporated Navajo County	758	1,120,650	8	634,500				975,284	843	2,730,434					
Winslow	82	227,856,558	579	194,668,416				52,752,429	110	479,016,549					
PIMA COUNTY	10,517								5,604						
Marana	9		1						3						
Oro Valley	26	973,095	1	2,500				713,959	13	1,689,534					
South Tucson	100	716,877	34	118,377				12,000	33	849,800					
Tucson	3,263	53,705,335	348	82,998,584	8	2,546		37,318,008	5	176,736,527					
Unincorporated Pima County	7,119	172,461,251	195	111,548,955				14,708,482	6,515	299,740,688					
PINAL COUNTY	1,211	14,357,491	59	2,613,287	2	1,022,000		4,157,000	10,010	23,495,278					
Casa Grande	196	4,728,808	14	854,430	3	2,367,500		936,411	1,788	8,864,649					
Coolidge	171	477,952			3	2,345,000		571,543	317	1,049,495					
Eloy	33	157,880**	3	162,500				108,553**	201	437,433					
Florence	21	414,150	2	15,000				30	73	665,171					
Keatney	29	238,400	4	409,135				236,021	47	801,235					
Mammoth	18	134,800	2	55,000	3	14,000		139,700	46	189,800					
Superior	23	29,750	2	5,900					20	47,950					
Unincorporated Pinal County	715	8,175,751	32	1,111,322				12,360	38	11,439,545					
SANTA CRUZ COUNTY	165	6,571,519	3	142,196				2,152,472	1,073	8,063,501					
Nogales	24	647,387	1	92,196	1	725,000		624,786	207	846,103					
Paragonia	13	129,055						106,320	28	134,215					
Unincorporated Santa Cruz County	128	5,794,877	2	50,000				513,306	21	7,083,183					
YAVAPAI COUNTY	2,629	53,925,349	154	10,923,956	18	725,000		7,140,131	3,727	87,306,656					
Chino Valley	140	2,129,086	6	286,000				121,013	207	2,536,099					
Clarkdale	34	599,030						83,672	40	682,702					
Cottonwood	189	1,696,245	25	1,203,345	3	64,000		581,474	260	3,545,064					
Jerome	2	2,800						1,000	5	11,000					
Prescott	528	7,833,999	57	4,544,761				2,101,528	1,109	14,996,008					
Unincorporated Yavapai County	1,564	39,008,195	55	4,590,182	3	515,720		4,211,844	1,920	62,399,721					
Prescott Valley	172	2,655,994	9	292,468	9	14,589,500		39,600	186	3,136,062					
YUMA COUNTY	1,946	34,333,747	99	10,680,550	7	1,774,434		6,210,533	2,471	52,999,264					
Parker	32	753,590	7	39,350				692,631	66	1,485,571					
Somerton	41	658,027	3	36,000				28,807	69	722,834					
Unincorporated Yuma County	1,224	19,055,537	48	5,019,478	4	250,251		2,505,677	1,411	26,830,943					
Wellton	4	57,200	1	12,000				8,000	7	77,200					
Yuma	645	13,809,393	40	5,573,722				2,975,418	918	23,882,716					
YEAR TOTAL Maricopa County, 1980	24,008	559,381,766	2,066	485,939,949	3	1,524,183		2,975,418	7	23,882,716					
YEAR TOTAL Maricopa County, 1979	32,930	751,562,454	2,207	464,555,779	560	159,706,038		284,095,021	46,387	1,489,122,774					
PERCENT CHANGE	-27	-26	-6	5	512	128,181,526		279,252,629	-23	1,623,552,388					
YEAR TOTAL Arizona, 1980	50,278	1,057,794,446	3,551	750,380,580	636	185,667,733		398,406,877	86,101	2,392,249,636					
YEAR TOTAL Arizona, 1979	68,579	1,328,924,302	5,707	726,226,979	601	178,444,511		387,316,594	107,243	2,620,912,386					
PERCENT CHANGE	-27	-20	-4	3	6	4		3	-9						

* Includes mobile homes.

N/C: Not collected.

**Building permits for Eloy, July, 1980, were reported incorrectly in the August/September issue of Arizona Business. Residential dollar value, which had been shown as \$8,800,000, should have been \$8,800. Other dollar value, shown as \$4,107,000 should have been \$4,107. The year-end totals shown here are correct.

Arizona New Housing Starts: Year-End Report

1980

BUILDING PERMITS ISSUED

	1*	3-4	5 or	Housing
	Family	Duplex	Families	More Units
APACHE COUNTY	127	—	—	159
Eagar	25	—	—	57
St. Johns	42	—	—	42
Springerville	15	—	—	15
Uninc. Apache Co.	45	—	—	45
COCHISE COUNTY	756	—	—	756
Benson	31	—	—	31
Bisbee	2	—	—	2
Douglas	48	—	—	48
Huachuca City	8	—	—	8
Sierra Vista	260	—	—	260
Tombstone	8	—	—	8
Uninc. Cochise Co.	373	—	—	373
Willcox	26	—	—	26
COCONINO COUNTY	992	14	5	5 1,137
Flagstaff	248	13	4	4 315
Fredonia	19	—	—	19
Page	128	—	—	128
Uninc. Coconino Co.	591	1	1	1 669
Williams	6	—	—	6
GILA COUNTY	501	4	2	1 520
Globe	18	2	1	— 25
Hayden	—	—	—	—
Miami	—	—	—	—
Payson	190	2	1	1 202
Uninc. Gila Co.	293	—	—	— 293
GRAHAM COUNTY	249	—	1	— 253
Pima	13	—	—	— 13
Safford	30	—	1	— 34
Thatcher	30	—	—	— 30
Uninc. Graham Co.	176	—	—	— 176
GREENLEE COUNTY	16	—	—	— 16
Clifton	4	—	—	— 4
Duncan	—	—	—	—
Uninc. Greenlee Co.	12	—	—	— 12
MARICOPA COUNTY	14,875	180	241	357 25,094
Avondale	50	—	1	— 54
Buckeye	17	—	—	— 1 77
Chandler	1,360	3	20	— 1,439
El Mirage	7	—	—	— 7
Gila Bend	4	—	—	— 3 40
Gilbert	89	—	1	— 93
Glendale	1,158	2	17	30 1,583
Goodyear	—	—	—	—
Guadalupe	7	—	—	— 7
Mesa	1,581	87	37	32 3,693
Paradise Valley	115	—	—	— 115
Peoria	229	—	—	— 229
Phoenix	4,630	37	59	115 9,629
Scottsdale	946	16	17	66 1,826
Surprise	16	—	—	— 16
Tempe	577	31	66	97 2,016
Tolleson	7	—	—	— 7
Uninc. Maricopa Co.	4,054	3	23	13 4,233
Wickenburg	21	—	—	— 21
Youngtown	7	1	—	— 9

*Includes mobile homes.

BUILDING PERMITS ISSUED

	1*	3-4	5 or	Housing
	Family	Duplex	Families	More Units
MOHAVE COUNTY	2,048	8	13	17 2,271
Kingman City	139	—	—	— 139
Kingman Area	307	3	5	— 333
Lake Havasu City	556	2	3	12 704
Lake Havasu Area	91	—	—	— 91
Mohave Valley North	504	3	5	5 553
Mohave Valley South	279	—	—	— 279
Dolan Springs	70	—	—	— 70
Sacramento Valley	76	—	—	— 76
Mohave Co. General	26	—	—	— 26
NAVAJO COUNTY	706	2	1	2 734
Holbrook	21	—	1	— 25
Show Low	74	—	—	— 74
Snowflake	30	—	—	— 30
Taylor	16	—	—	— 16
Uninc. Navajo Co.	531	—	—	— 531
Winslow	34	2	—	2 58
PIMA COUNTY	6,192	88	62	59 8,800
Marana	7	—	—	— 7
Oro Valley	12	—	—	— 12
South Tucson	14	—	—	— 14
Tucson	1,537	81	61	51 3,433
Uninc. Pima Co.	4,622	7	1	8 5,334
PINAL COUNTY	663	5	23	— 756
Casa Grande	105	—	5	— 124
Coolidge	29	1	—	— 31
Eloy	4	—	—	— 4
Florence	10	2	—	— 14
Kearny	9	—	—	— 9
Mammoth	12	—	—	— 12
Superior	4	—	—	— 4
Uninc. Pinal Co.	490	2	18	— 558
SANTA CRUZ COUNTY	125	1	—	— 127
Nogales	11	—	—	— 11
Paragonia	8	—	—	— 8
Uninc. Santa Cruz Co.	106	1	—	— 108
YAVAPAI COUNTY	1,624	18	25	9 1,813
Chino Valley	84	—	—	1 90
Clarkdale	15	—	—	— 15
Cottonwood	69	2	2	— 79
Jerome	—	—	—	—
Prescott	219	5	15	4 305
Uninc. Yavapai Co.	1,116	9	5	4 1,189
Prescott Valley	121	2	3	— 135
YUMA COUNTY	1,176	6	26	7 1,331
Parker	20	—	—	— 20
Somerton	20	—	—	— 20
Uninc. Yuma Co.	779	2	6	5 836
Wellton	2	—	—	— 2
Yuma	355	4	20	2 453
YEAR TOTAL, Maricopa County, 1980	14,875	180	241	357 25,094
YEAR TOTAL, Maricopa County, 1979	24,128	174	270	518 38,239
PERCENT CHANGE	-38.	3.	-11.	-31. -34.
YEAR TOTAL, Arizona, 1980	30,050	326	399	458 43,767
YEAR TOTAL, Arizona, 1979	44,542	338	387	626 63,783
PERCENT CHANGE	-33.	-4.	3.	-27. -31.

The Arizona Business Scene



Arizona Tourism: 1980



Out-of-state visitors are important to the Arizona economy, for they consume goods and services produced by the state's businesses. These expenditures are presented in Table 1. The demand created by these visitors requires additional employment by Arizona's businesses beyond that which would otherwise be necessary. In fiscal year 1979-1980 an estimated 58,000 jobs in Arizona were directly related to tourism and 32,800 additional jobs were indirectly related to tourism. These 90,800 jobs represented approximately 9 percent of Arizona's total employment, thus, benefiting both businesses and individuals.

TABLE 1

TOURISM AND TRAVEL EXPENDITURES IN ARIZONA

	1979 (\$000)	1980 (\$000)	Percentage Change
Highway	\$1,943,683	\$2,207,170	13.6
Airline	971,774	1,024,500	5.4
Total (By Out-of-State Tourists)	\$2,915,457	\$3,231,670	10.8
Instate Travel	563,944	666,596	18.2
Total	\$3,479,401	\$3,898,266	12.0

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

Another benefit that affects state residents is the tax aspect of tourism: \$36.4 million in state gasoline taxes and \$104.8 million in state sales taxes were paid by out-of-state tourists in fiscal year 1979-1980. These tax con-

tributions represented 32.5 percent of the total state gasoline tax collected and 13.1 percent of the total state sales tax collected.

In recent years tourism in Arizona showed steady growth both in the number of tourists and in the amount of their expenditures. In 1980, however, tourism expenditures grew only 12 percent, after three consecutive years of 18 percent or greater growth. When the inflation rate is considered, the real change in tourism expenditures in 1980 from 1979 was negative and was the first decrease in real expenditures during the period in which tourism data has been compiled.

This decrease in inflation-adjusted expenditures probably related to the recession of 1980 and to the continued rapid inflation felt by all consumers, including tourists and potential tourists. These economic conditions contributed to an overall decrease in the number of tourists visiting Arizona in 1980; however the number of highway tourists was approximately the same as in 1979, while the number of airline tourists decreased sharply in 1980, by 7.1 percent. The high and rapidly increasing costs of gasoline and air travel were probable causes of this reduction in the number of tourists; gasoline prices increased 36.7 percent and air fares rose 29.3 percent in 1980, as measured by the Metropolitan Phoenix Consumer Price Index.

A major statewide tourism study was completed in 1980 by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University. The study, an update of the original study done in 1976, also introduces several new topics. The figures in this article present a brief summary of the major

findings of the study and some of the notable changes in tourism patterns. All of the findings will be presented in a forthcoming publication, *Tourism and Travel in Arizona*.

The total tourism and travel expenditures in Table 1 are shown in more detail in Table 2. The expenditures during 1979 were originally estimated with calculations and information based on tourism patterns shown in the 1976 study. However, the tourism patterns changed between the 1976 study and the 1980 study, so it was important to calculate the 1979 figures in two ways: the first is based on the 1976 tourism patterns; the more recent figures are based on the 1980 tourism patterns. The updated 1979 figures shown in Tables 1 and 2 are based on the 1980 study, and although they are lower than previously published tourism figures for that year, they are considered to be the most accurate estimate of expenditures during 1979.

TABLE 2
ARIZONA TOURISM AND TRAVEL
EXPENDITURES
(millions)

Year	Lodging	Food	Transportation	Other	Total
1980	\$840.9	\$1,206.0	\$ 910.2	\$ 941.2	\$3,898.3
1979	762.9	1,075.0	802.4	839.1	3,479.4
1979*	837.4	738.8	1,042.2	1,422.3	4,040.7
1978*	688.3	663.6	816.4	1,257.4	3,425.7
1977*	560.1	581.2	689.2	1,054.2	2,884.6

*Expenditures computed under methodology of 1976 study.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

One of the major differences between the two studies is that the proportion of airline tourists to total tourists decreased considerably from 1976 to 1980. Since the expenditure pattern of airline tourists is different from that of highway tourists, all four categories of expenditures as well as the total tourist expenditures, are affected. In addition, the average highway tourist in 1980 spent less on lodging, entertainment, retail and other consumption than the average highway tourist in 1976. The average airline tourist in 1980 spent much less on entertainment, retail, and other consumption than in 1976 and the average instate tourist in 1980 took fewer overnight trips, reducing instate lodging expenditures from 1976. Thus, tourists visiting Arizona in 1980 reported a number of basic changes in expenditure patterns compared to tourists in 1976.

The two major population centers in Arizona receive approximately two-thirds of the total out-of-state tourist expenditures. In fiscal year 1979-1980 (the time period analyzed in the new study), Metropolitan Phoenix received 49 percent of the state's tourism expenditures and Metropolitan Tucson received 19 percent. The three counties receiving the next largest shares of tourist expenditures were Coconino (7.9 percent), Yuma (4.7 percent), and Mohave (4.5 percent). The proportions received by each of these three counties are greater than would be expected given their population size, thus establishing each of these counties as popular tourist spots.

The majority of Arizona tourists come by highway, although airline tourists are an important segment (see Table 3). Highway visitors and airline visitors differ in a number of ways. Airline travelers tend to have a smaller party size, stay somewhat longer in Arizona, and spend considerably more money per day than highway visitors. Although an airline party averages only 1.5 persons, compared to 2.5 per highway party, an airline party spends more than twice as much per trip than a highway party (\$850 compared to \$400).

TABLE 3
TOURIST PARTIES IN ARIZONA, 1979-1980

Tourist Parties (Out of State)	1979	1980	Percentage Change
Highway	5,274,000	5,281,000	0.1
Airline	1,245,000	1,157,000	-7.1

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

Highway travelers tend to visit more areas of the state than airline travelers and visit some of the non-urban counties in larger numbers. Airline travelers, on the other hand, generally remain in the urbanized areas, since over half of them come to Arizona for the specific reason of business or attending a convention. In contrast, over half of the highway visitors are on vacation or passing through the state. Highway travelers come primarily from the nearby Pacific and mountain regions of the country, while larger shares of the airline tourists come from the East, particularly the Great Lakes states and the mid-Atlantic and south Atlantic states.

During fiscal year 1979-1980, nearly 700,000 convention visitors came to Arizona; slightly more than half arrived by air. Although convention visitors do not

stay as long in Arizona as other tourists, they are an important segment of the overall tourism industry, and they spend more money per day. The majority of convention sites are in Phoenix, Scottsdale, and Tucson.

Determining the reasons that tourists are attracted to Arizona is important to maintaining the growth of tourism. For both airline and highway visitors two primary factors influenced decisions to visit Arizona: information from friends and relatives, and the impression created by previous visits to the state. To a large extent, the state and its residents sell themselves; approximately one-third of all visitors come to Arizona primarily to visit friends and relatives. The traditional

forms of advertising, such as travel literature and magazines, have a lesser impact on decisions to visit Arizona.

While actual tourism expenditures continued to increase in 1980, the inflation-adjusted growth rate declined, presenting a concern to both the tourism industry and the state government. At this time the outlook for 1981 is conservative as many of the factors contributing to the slowdown in tourism in 1980 continue into 1981 — an unstable national economy, high and rising gasoline prices, and high and rising air fares. If improvements are made in these economic conditions, the Arizona tourism industry should return to its former pattern of rapid growth later in 1981.

A Survey of Arizona Business Conditions

HAROLD FEARON

The Arizona economy was flat in February, following a slight upward movement in January, according to results from the monthly business survey of the Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona. Inventory levels declined somewhat, while new orders received from customers, production rates, and employment remained unchanged in February compared to January. Prices advanced again in February, but at the smallest rate in any of the past five months. While the data show that the Arizona economy is holding its own, there is no evidence of any upward momentum, and the growth rate in the first quarter will be much less than sensational.

The purchasing business survey now is in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Prices paid for major purchased items went up again in February, but at a smaller rate than in January and the smallest increase since last September. Fifty-five percent of the purchasing managers reported they paid higher prices in February than in January; 40 percent saw prices unchanged; and only 5 percent said prices declined. It is possible that, following the national trend of declining raw material prices as shown by the Bureau of Labor Statistics Index of Raw Materials, the rate of price increases faced by Arizona firms also is beginning to drop a bit. If so, that is good news for the long-term future growth rate of the economy, but it is too early to tell whether this is the beginning of a trend.

Delivery time on shipments from vendors continued to stretch out in February, but the rate was only half of that in January and the lowest since last September. Longer delivery times were reported by 23 percent of the firms; 14 percent received faster delivery service from their vendors. The relatively small increases on this indicator provide further evidence that the Arizona economy is operating on a fairly stable plateau.

Purchased materials inventory levels declined in February, following a slight rise in January. Higher purchased stocks were reported by 24 percent of the firms, while a larger 30 percent reduced inventory investment. Inventory levels have dropped each month, beginning in April, 1980, with the exception of last November and January. This signals that Arizona firms are being very cautious in making inventory decisions, and it also shows that raw material inventory levels are well under control and balanced with the slow rate of economic growth now being experienced.

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New orders received from customers enjoyed only a marginal increase, which was substantially less than in the previous month. Thirty-three percent of the firms said their order books increased in February, but an almost equal 30 percent saw a decrease in the rate of new business bookings. This indicator has shown only lackluster business growth ever since the last quarter of 1979.

Production of Arizona firms showed no change in February, with an equal 29 percent of firms reporting higher and lower output rates compared to January. Since production follows new order bookings closely, this result is in line with other indicators.

Employment showed essentially no change, with 19 percent saying they added to their workforce in February and 18 percent trimming payrolls. This makes the third consecutive month of no growth in employment.

Thus, the Arizona economy finished out February with a noticeable lack of upward momentum. This makes the third consecutive month of very sluggish economic growth. While many people expect the new administration in Washington to take dramatic action

to get the economy moving again, no quick fix is possible, and it is likely that the Arizona economy will see several more months of very slow growth or no growth at all.

The results of the February purchasing are shown in Table 1.

TABLE 1
FEBRUARY PURCHASING SURVEY

Key Indicator	Percent of Purchasing Managers Indicating Each Response (February compared to January)		
	Higher	Same	Lower
Prices paid for major commodities	55	40	5
Delivery time from vendors	23	63	14
Purchased materials inventory level	24	46	30
New orders received	33	37	30
Production	29	42	29
Employment	19	63	18

Source: Purchasing Management Association of Arizona and Purchasing Management Association of Southern Arizona.

ARIZONA SALES OF ELECTRICAL POWER By Months in Millions of KWH*

Current Month:	Actual:		Percent Change Current Month From	
	1981	1980	Same Month/ Prev. Year	Previous Month
January	2347.7	2200.0	+ 6.7	+ 3.2

* Based on reports from major suppliers.

Arizona Building Permits: Monthly Report

JANUARY, 1981

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Number of Permits	Number of Permits	Dollar Value	Dollar Value
APACHE CO.	9	55,950	1	1	57,000	2	2	618,000	2	2	1,200	14	14	732,150	
Eagar	2	35,500	1	1	57,000	2	2	618,000	2	2	1,200	14	14	732,150	
St. Johns	3	N/C	—	—	—	—	—	—	—	—	N/C	4	4	710,500	
Springerville	1	N/C	—	—	—	—	—	—	—	—	N/C	1	1	N/C	
Unincorporated	3	20,450	—	—	—	—	—	—	—	—	1,200	4	4	21,650	
COCHISE CO.	91	1,416,189	6	6	276,000	—	—	—	—	—	925,183	171	171	2,617,372	
Benson	4	75,000	—	—	—	—	—	—	—	—	250	5	5	75,250	
Bisbee	9	35,700	—	—	—	—	—	—	—	—	—	9	9	35,700	
Douglas	9	223,716	—	—	—	—	—	—	—	—	15,399	13	13	239,115	
Huachuca City	4	2,071	—	—	—	—	—	—	—	—	—	4	4	2,071	
Sierra Vista	26	385,094	2	2	180,000	—	—	—	—	—	110,188	76	76	673,282	
Tombstone	4	3,100	2	2	46,000	—	—	—	—	—	1,850	9	9	50,950	
Unincorporated	32	673,808	—	—	—	—	—	—	—	—	797,496	50	50	1,471,304	
Willcox	3	19,700	2	2	50,000	—	—	—	—	—	—	5	5	69,700	
COCONINO CO.	81	1,689,804	5	5	80,519	1	1	9,600	20	20	435,842	116	116	2,215,765	
Flagstaff	16	550,482	4	4	42,100	—	—	9,600	22	22	229,200	43	43	831,382	
Fredonia	1	8,000	—	—	—	—	—	—	—	—	—	1	1	8,000	
Page	15	136,529	1	1	38,419	—	—	—	2	2	160,500	17	17	297,029	
Unincorporated	43	959,593	—	—	—	—	—	—	4	4	45,942	48	48	1,043,954	
Williams	6	35,200	—	—	—	—	—	—	1	1	200	7	7	35,400	
Unincorporated	6	561,428	2	2	17,000	—	—	—	18	18	107,408	67	67	685,836	
Globe	2	5,000	—	—	—	—	—	—	7	7	78,100	9	9	83,100	
Hayden	2	1,200	—	—	—	—	—	—	—	—	—	2	2	1,200	
Miami	1	690	—	—	—	—	—	—	1	1	8,000	2	2	8,690	
Payson	20	210,558	2	2	17,000	—	—	—	7	7	16,808	29	29	244,166	
Unincorporated	22	344,180	—	—	—	—	—	—	3	3	4,500	25	25	348,680	
GRAHAM CO.	34	491,743	—	—	—	—	—	—	4	4	4,385	38	38	496,128	
Pima	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Safford	9	125,550	—	—	—	—	—	—	4	4	4,385	13	13	129,935	
Thatcher	4	50,000	—	—	—	—	—	—	—	—	—	4	4	50,000	
Unincorporated	21	316,193	—	—	—	—	—	—	—	—	—	21	21	316,193	
GREENLEE CO.	2	29,270	—	—	—	—	—	—	—	—	—	2	2	29,270	
Clifton	1	N/C	—	—	—	—	—	—	—	—	—	1	1	N/C	
Duncan	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Unincorporated	1	29,270	—	—	—	—	—	—	—	—	—	1	1	29,270	
MARICOPA CO.	2,064	52,244,486	190	190	38,101,347	—	—	9,195,439	1,687	1,687	22,421,477	3,984	3,984	121,962,749	
Avalon	5	7,680	1	1	34,000	—	—	—	9	9	11,300	15	15	52,980	
Buckeye	5	10,230	—	—	—	—	—	—	1	1	504	6	6	10,734	
Chandler	392	11,746,622	17	17	1,355,000	—	—	552,840	384	384	971,640	795	795	14,606,102	
El Mirage	3	1,643	—	—	—	—	—	—	2	2	860	5	5	2,503	
Gila Bend	2	27,500	—	—	—	—	—	—	—	—	—	2	2	27,500	
Gilbert	11	289,780	1	1	96,000	—	—	10,000	18	18	14,689	31	31	410,469	
Glendale	107	2,441,760	18	18	2,334,000	—	—	44,000	149	149	425,451	277	277	5,245,211	
Goodyear	—	—	—	—	—	—	—	—	5	5	7,259	5	5	7,259	
Guadalupe	3	34,100	—	—	—	—	—	—	—	—	—	3	3	34,100	
Mesa	144	4,409,582	12	12	1,428,100	—	—	502,652	263	263	2,783,344	420	420	9,125,678	
Paradise Valley	22	950,054	—	—	—	—	—	—	—	—	85,694	36	36	1,035,748	
Peoria	18	282,176	5	5	435,320	—	—	—	25	25	1,355,287	48	48	2,070,785	
Phoenix	386	16,548,511	43	43	17,205,771	—	—	3,801,547	489	489	7,949,977	1,133	1,133	45,505,806	
Scottsdale	98	4,755,286	9	9	922,506	—	—	—	115	115	806,185	222	222	6,483,777	
Surprise	5	37,225	—	—	—	—	—	—	1	1	1,700	6	6	38,925	
Tempe	75	3,280,700	68	68	12,236,100	—	—	—	103	103	4,033,300	267	267	23,834,500	
Tolleson	8	15,100	—	—	—	—	—	—	1	1	12,000	9	9	27,100	
Unincorporated	559	7,323,130	16	16	2,076,750	—	—	—	106	106	3,959,787	681	681	13,359,667	
Wickenburg	1	35,000	—	—	—	—	—	—	—	—	—	1	1	35,000	
Youngtown	20	50,407	—	—	—	—	—	—	2	2	2,500	22	22	52,907	

Arizona Building Permits: Monthly Report (Continued)

JANUARY, 1981

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE CO.	284	4,411,737	18	754,559	1	367,640	212	522,547	515	6,056,483
Kingman City	13	240,496	4	138,500	—	—	7	17,031	24	396,027
Kingman Area	55	688,236	2	133,280	—	—	56	55,264	113	876,780
Lake Havasu City	44	1,481,055	4	80,839	—	—	15	85,914	63	1,647,808
Lake Havasu Area	5	25,544	—	—	—	—	8	155,880	13	181,424
Mohave Valley N.	102	1,169,088	4	307,308	—	—	63	93,877	169	1,570,273
Mohave Valley S.	38	477,540	3	59,688	—	—	39	83,840	80	621,068
Dolan Springs	12	108,096	—	—	—	—	10	14,361	22	122,457
Sacramento Valley	10	144,976	1	34,944	—	—	10	11,108	21	191,028
Mohave Co. General	5	76,706	—	—	1	367,640	4	5,272	10	449,618
NAVAJO CO.	35	490,937	4	81,044	—	—	6	5,784	45	577,765
Holbrook	1	40,000	—	—	—	—	1	2,000	2	42,000
Show Low	3	41,262	3	52,244	—	—	—	—	6	93,506
Snowflake	3	N/C	—	—	—	—	—	—	3	N/C
Taylor	4	49,000	—	—	—	—	—	—	4	49,000
Unincorporated	21	355,675	1	28,800	—	—	3	1,884	25	386,559
Winslow	3	5,000	—	—	—	—	2	1,900	5	6,900
PIMA CO.	664	13,150,734	43	10,657,615	3	295,986	430	4,791,131	1,140	28,895,466
Marana	1	N/C	—	—	—	—	2	N/C	3	N/C
Oro Valley	10	43,160	—	—	—	—	—	—	—	—
South Tucson	201	2,489,029	28	3,552,115	2	30,686	—	—	12	73,846
Tucson	452	10,618,545	15	7,105,500	1	265,300	197	4,061,334	427	10,367,778
Unincorporated	422	1,738,273	4	2,000	—	—	231	729,797	698	18,453,842
PINAL CO.	44	598,283	—	—	—	—	36	108,143	462	1,848,416
Apache Jct.	17	463,597	—	—	—	—	27	18,595	71	616,878
Casa Grande	18	26,513	4	2,000	—	—	—	—	17	463,597
Coolidge	4	9,160	—	—	—	—	—	—	22	28,513
Eloy	—	—	—	—	—	—	—	—	4	9,160
Florence	3	58,500	—	—	—	—	1	200	1	200
Kearny	1	12,000	—	—	—	—	—	—	3	58,500
Mammoth	—	—	—	—	—	—	—	—	1	12,000
Superior	—	—	—	—	—	—	—	—	—	—
Unincorporated	335	570,220	—	—	—	—	8	89,348	343	659,568
SANTA CRUZ CO.	8	205,070	—	—	—	—	2	11,140	10	216,210
Nogales	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Patagonia	1	7,000	—	—	—	—	1	140	2	7,140
Unincorporated	7	198,070	—	—	—	—	1	11,000	8	209,070
YAVAPAI CO.	212	4,728,136	19	1,480,812	3	27,700	73	678,596	307	6,915,244
Chino Valley	11	169,550	2	9,000	1	5,000	1	3,000	15	186,550
Clarkdale	5	15,450	—	—	—	—	—	—	6	32,950
Cottonwood	13	140,650	1	94,000	—	17,500	—	—	24	248,888
Jerome	2	4,400	—	—	—	—	—	—	2	4,400
Prescott	48	983,098	4	305,440	—	—	29	199,407	81	1,487,945
Prescott Valley	27	463,376	5	181,872	—	—	1	139,776	33	785,024
Unincorporated	106	2,951,612	7	890,500	1	5,200	32	322,175	146	4,169,487
YUMA CO.	47	614,530	8	841,002	1	7,350	30	620,561	86	2,083,443
Parker	—	—	—	—	—	—	4	237,400	4	237,400
Somerton	5	62,500	—	—	—	—	2	3,000	7	65,500
Unincorporated	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Wellton	—	—	—	—	—	—	2	16,500	2	16,500
Yuma	42	552,030	8	841,002	1	7,350	22	363,661	73	1,764,043
Total Maricopa County, January, 1981	2,064	52,244,486	190	38,101,347	43	9,195,439	1,687	22,421,477	3,984	121,962,749
Total Maricopa County, January, 1980	2,337	48,065,187	228	55,810,898	48	11,784,910	1,828	17,229,925	4,441	132,890,920
Percent Change	-11	8	-16	-31	-10	-21	-7	30	-10	-8
Total Arizona, January, 1981	4,000	81,828,287	300	52,348,898	54	10,521,715	2,603	30,633,397	6,957	175,332,297
Total Arizona, January, 1980	4,337	78,835,259	330	76,726,111	56	12,750,196	2,602	25,366,302	7,325	193,677,868
Percent Change	-7	3	-9	-31	-3	-17	—	20	-5	-9

*Includes mobile homes.
N/C: Not collected.

N/R: No report; data for this month will be combined with data reported for the following month.

Arizona New Housing Starts: Monthly Report

JANUARY, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
APACHE CO.	4	—	—	—	—	4
Eagar.	1	—	—	—	—	1
St. Johns.	—	—	—	—	—	—
Springerville.	1	—	—	—	—	1
Unincorporated.	2	—	—	—	—	2
COCHISE CO.	29	16	—	—	—	45
Benson.	2	1	—	—	—	3
Bisbee.	1	—	—	—	—	1
Douglas.	3	—	—	—	—	3
Huachuca City.	—	—	—	—	—	—
Sierra Vista.	8	3	—	—	—	11
Tombstone.	—	1	—	—	—	1
Unincorporated.	15	11	—	—	—	26
Willcox.	—	—	—	—	—	—
COCONINO CO.	31	21	1	—	—	54
Flagstaff.	7	—	1	—	—	9
Fredonia.	—	—	—	—	—	—
Page.	2	6	—	—	—	8
Unincorporated.	22	14	—	—	—	36
Williams.	—	1	—	—	—	1
GILA CO.	17	10	—	—	—	27
Globe.	—	—	—	—	—	—
Hayden.	—	—	—	—	—	—
Miami.	—	—	—	—	—	—
Payson.	7	4	—	—	—	11
Unincorporated.	10	6	—	—	—	16
GRAHAM CO.	9	6	1	—	—	17
Pima.	—	—	—	—	—	—
Safford.	2	—	1	—	—	4
Thatcher.	—	—	—	—	—	—
Unincorporated.	7	6	—	—	—	13
GREENLEE CO.	2	—	—	—	—	2
Clifton.	1	—	—	—	—	1
Duncan.	—	—	—	—	—	—
Unincorporated.	1	—	—	—	—	1
MARICOPA CO.	1,137	235	11	36	61	2,441
Avondale.	1	2	—	—	—	3
Buckeye.	—	—	—	—	—	—
Chandler.	373	—	—	16	—	437
El Mirage.	—	—	—	—	—	—
Gila Bend.	1	—	—	—	—	1
Gilbert.	3	—	—	1	—	7
Glendale.	75	—	—	—	—	75
Goodyear.	—	—	—	—	—	—
Guadalupe.	—	—	—	—	—	—
Mesa.	105	—	6	2	2	144
Paradise Valley.	6	—	—	—	—	6
Peoria.	10	—	—	—	—	10
Phoenix.	299	39	1	6	9	644
Scottsdale.	63	—	—	—	—	63
Surprise.	—	4	—	—	—	4
Tempe.	48	—	3	11	50	703
Tolleson.	1	—	—	—	—	1
Unincorporated.	149	190	1	—	—	341
Wickenburg.	1	—	—	—	—	1
Youngtown.	1	—	—	—	—	1

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
MOHAVE CO.	63	98	1	—	—	163
Kingman City.	5	—	—	—	—	5
Kingman Area.	10	26	—	—	—	36
Lake Havasu City.	23	2	1	—	—	27
Lake Havasu Area.	—	1	—	—	—	1
Mohave Valley N.	13	41	—	—	—	54
Mohave Valley S.	7	16	—	—	—	23
Dolan Springs.	—	8	—	—	—	8
Sacramento Val.	3	2	—	—	—	5
Mohave General.	2	2	—	—	—	4
NAVAJO CO.	16	13	—	—	—	29
Holbrook.	1	—	—	—	—	1
Show Low.	1	2	—	—	—	3
Snowflake.	3	—	—	—	—	3
Taylor.	1	3	—	—	—	4
Unincorporated.	10	8	—	—	—	18
Winslow.	—	—	—	—	—	—
PIMA CO.	205	200	6	2	3	595
Marana.	—	1	—	—	—	1
Oro Valley.	—	—	—	—	—	—
South Tucson.	1	—	—	—	—	1
Tucson.	45	39	4	2	2	160
Unincorporated.	159	160	2	—	1	433
PINAL CO.	32	324	—	—	—	356
Apache Junc.	8	22	—	—	—	30
Casa Grande.	10	—	—	—	—	10
Coolidge.	—	—	—	—	—	—
Eloy.	—	—	—	—	—	—
Florence.	—	—	—	—	—	—
Kearny.	1	1	—	—	—	2
Mammoth.	—	—	—	—	—	—
Superior.	—	—	—	—	—	—
Unincorporated.	13	301	—	—	—	314
SANTA CRUZ CO.	5	—	—	—	—	5
Nogales.	N/R	N/R	N/R	N/R	N/R	N/R
Patagonia.	—	—	—	—	—	—
Unincorporated.	5	—	—	—	—	5
YAVAPAI CO.	84	47	2	3	—	147
Chino Valley.	3	3	—	—	—	6
Clarkdale.	—	—	—	—	—	—
Cottonwood.	4	2	—	—	—	6
Jerome.	—	—	—	—	—	—
Prescott.	17	2	—	2	—	27
Prescott Valley.	14	4	2	1	—	26
Unincorporated.	46	36	—	—	—	82
YUMA CO.	7	1	3	5	1	39
Parker.	—	—	—	—	—	—
Somerton.	1	1	—	—	—	2
Unincorporated.	N/R	N/R	N/R	N/R	N/R	N/R
Wellton.	—	—	—	—	—	—
Yuma.	6	—	3	5	1	37
Total, Maricopa Co., January, 1981.	1,137	235	11	36	61	3,531
Total, Maricopa Co., January, 1980.	1,127	200	16	20	74	2,531
Percent Change.	—	17	-31	79	-17	-30
Total, Arizona, January, 1981.	1,641	971	25	46	65	3,924
Total, Arizona, January, 1980.	1,801	592	34	31	80	5,065
Percent Change.	—	17	-31	79	-17	-30

*Beginning with this report, mobile home permits are listed separately instead of being included with single-family permits.

N/R: No report; data for this month will be for the following month.

Maricopa County

Retail Food Prices

FEBRUARY, 1981

Retail food prices in Maricopa County rose 0.7 percent in February, following a 1.2 percent increase in January. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The February index of 260.5 indicates that shoppers would now have to pay \$26.05 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$23.04 one year ago. The February, 1981 index reflects a 13.1 percent gain over the February, 1980 value.

Responsible for this month's higher index value were increases for *Fruits and Vegetables* (2.4 percent), followed by *Cereals and Bakery Products* (2.1 percent) and *Dairy Products* (1.0 percent). A slight gain was posted in the subgroup *Other Foods* (0.5 percent), while *Meats, Poultry, Fish, and Eggs* dropped slightly (-0.6 percent).

Higher prices in several categories of *Fruits and Vegetables* led to the increase in that subgroup. Decreased production of the winter vegetable crop in Mexico, coupled with poor weather during the growing season in both Mexico and Florida, contributed to the surge in tomato prices, up 32.5 percent during February. Prices also climbed for bananas (15.2 percent) and oranges (14.8 percent). Moderating these gains was a reduction in lettuce prices (-14.1 percent).

Most prices in the *Cereals and Bakery Products* subgroup rose or were unchanged this month. Sweet rolls, coffee cake, and doughnuts jumped 11.4 percent, followed by fresh cake and cupcakes (8.3 percent). For the second consecutive month, rising rice prices contributed to the 3.0 percent increase in the category of rice, macaroni, and commel. Price reductions for fresh biscuits, rolls, and muffins (-4.4 percent) partially offset the gains posted for the overall subgroup.

The one percent gain in the *Dairy Products* subgroup was due in part to a 3.3 percent increase in cheese prices and a 1.7 percent rise for fresh milk (other than whole milk) and cream. These advances were partially counteracted by a drop in the miscellaneous dairy products category (-3.0 percent).

Price increases outweighed the decreases in the *Other Foods* subgroup during February, resulting in a small overall gain. A sharp hike in peanut butter prices led to an 8.9 percent gain in the category of nondairy substitutes, imitation milk, and peanut butter. Increases of 2.6 percent were posted for noncarbonated beverages (excluding coffee), along with nuts, potato chips, and other snacks. Decreases in the subgroup included items in the frozen, prepared food category (-3.0 percent) followed by roasted coffee (-2.7 percent) and freeze dried/instant coffee (-2.1 percent).

Falling prices for chicken and pork contributed to the decline in *Meats, Poultry, Fish, and Eggs*. Prices for both fresh or frozen chicken parts and fresh whole chicken dropped, 16.6 percent and 9.2 percent respectively. With the exception of pork chops (up 3.7 percent), all categories of pork were down, notably sausage (-5.4 percent), noncanned ham (-4.5 percent), and bacon (-4.1 percent). These declines were partially offset by increases for fresh or frozen fish and shellfish (5.8 percent), eggs (4.3 percent), and chuck roast (2.9 percent).

A comparison of November, 1980 Food Consumed at Home for Maricopa County with four selected metropolitan areas (Table 1, page 36) reveals that the outlays required to purchase a foodstuffs group in November, 1980 (obtainable for an outlay of \$10.00 at 1967 average prices) were \$25.22 in Maricopa County; \$25.98 in Los Angeles-Long Beach; \$26.35 in San Francisco-Oakland; \$26.33 in Chicago-Northwestern Indiana; and averaged \$26.21 in the United States.

TABLE 1

INDEX FOR FOOD CONSUMED AT HOME
 Maricopa County, United States, and Selected Metropolitan Areas
 (Average 1967 = 100 percent)

Group	Maricopa County Feb. '81 ^a	Maricopa County Nov. '80 ^b	United States Nov. '80	Los Angeles ^c Long Beach Nov. '80	San Francisco Oakland Nov. '80	Chicago ^c North western Indiana Nov. '80
Food Consumed at Home	260.5	252.2	262.1	259.8	263.5	263.3
Cereals and Bakery Products	248.6	237.3	255.8	264.9	259.2	264.6
Meats, Poultry, Fish, and Eggs	261.0	261.6	254.9	251.4	259.2	263.8
Dairy Products	228.9	220.0	235.7	229.6	231.3	226.5
Fruits and Vegetables	249.0	231.2	235.3	247.9	258.0	252.8
Other Foods Consumed at Home	291.5	281.0	314.8	309.5	318.4	314.2

*Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

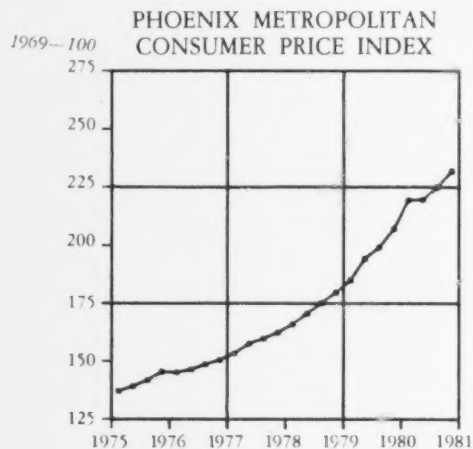
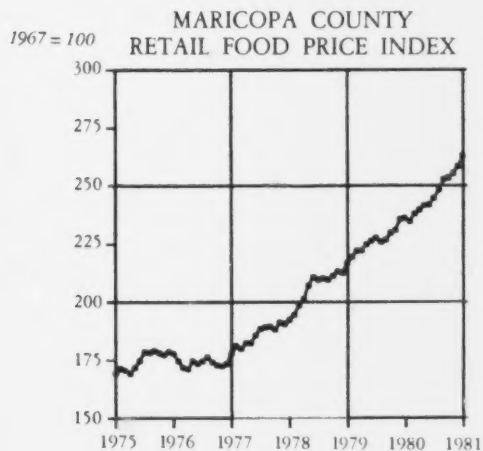
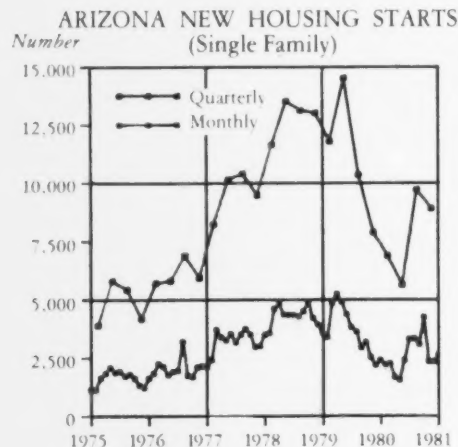
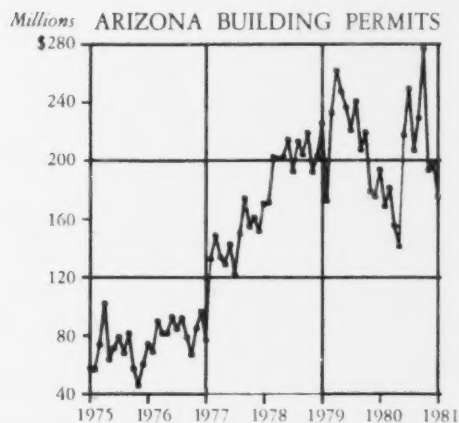
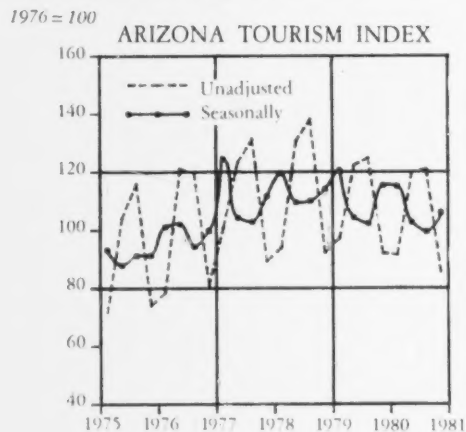
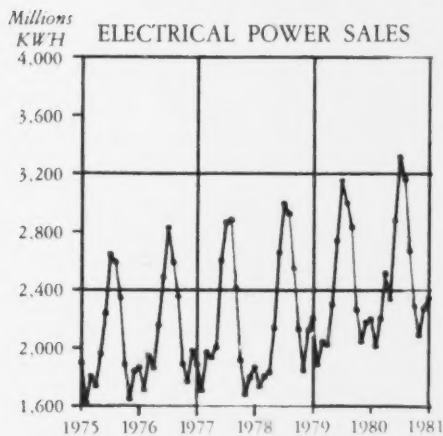
^aMaricopa County food prices are reported for the month closest to publication.

^bComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index Comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indices cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Arizona Economic Indicators



Source: All data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

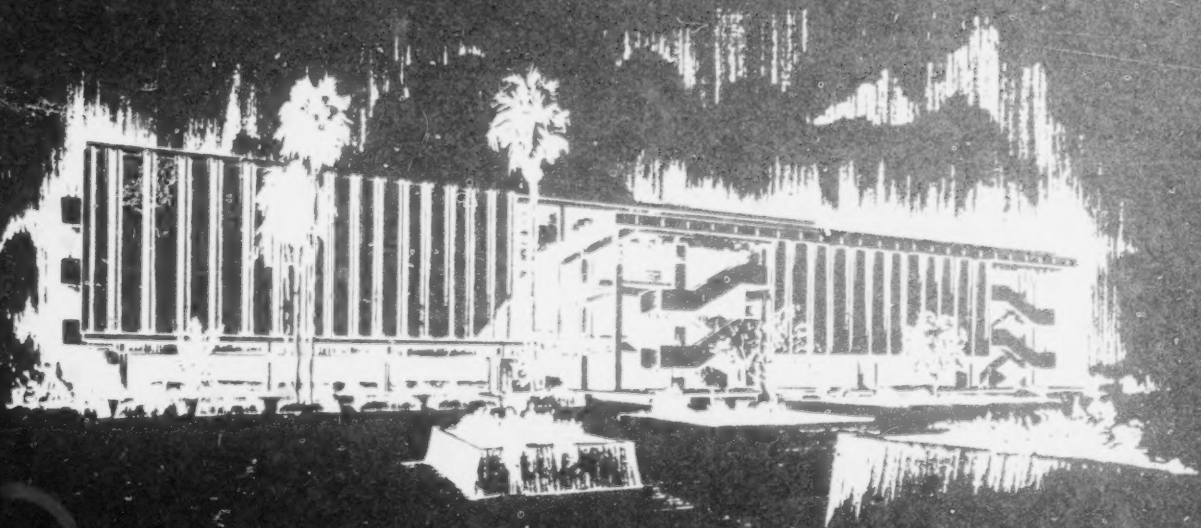
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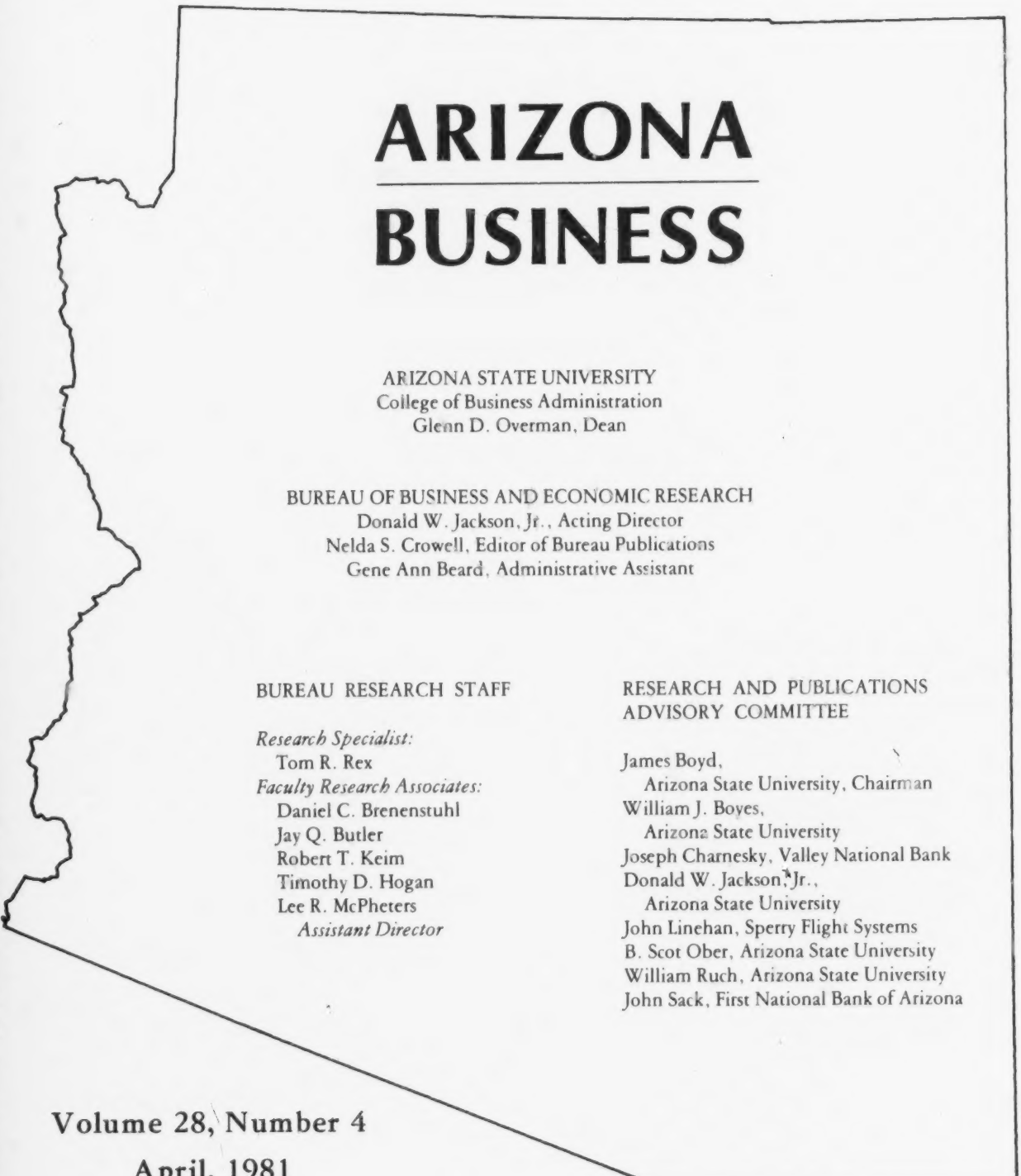
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Report To The Reader

Attention, managers of the future! Be prepared for change! In this issue of *Arizona Business*, four professors in the Arizona State University Department of Management look at the directions and extent of some changes that managers can expect in the next two decades. Following are some of their observations:

- One of the most pressing problems is increasing productivity. Maintaining our current level of productivity is insufficient; productivity must increase.

- The service industries will continue to employ an increasing percentage of the work force.

- Greater emphasis in manufacturing will be given to processes that are material and equipment intensive.

- Assuring material supply availability will assume a major position in corporate planning. This requires more sophisticated forecasting techniques, consideration of technology alternates, and innovative solutions to supply availability. Firms must keep a watch on the geopolitical situation.

- Pressures from government and affected groups will expand the scope of equal employment opportunity.

- Fringe benefits are growing. Not only will employers be asked to pay a larger share of fringe benefit costs, but the list of benefits will grow.

- In the year 2000, the labor force will be older, better educated, and comprised of a greater proportion of women and minorities, and single parents.

- Organizations will become even more dependent on scientific and technical knowledge.

Editor's Note: The Metropolitan Phoenix Consumer Price Index and the Food Price Index are cosponsored by Valley National Bank. This information was inadvertently omitted from the CPI tables and the food price tables in the March issue of *Arizona Business*. Their service in cosponsoring these studies is appreciated.

CALL FOR PAPERS

International business will be the theme of a future issue of *Arizona Business*. Authors who wish to submit articles for this issue should send them to *Arizona Business*, Bureau of Business and Economic Research, College of Business Administration, Arizona State University, Tempe, AZ 85281. Deadline is June 15, 1981.

Management to the Year 2000

HAROLD FEARON
WILLIAM REIF
WILLIAM RUCH
WILLIAM WERTHER

Change is a fact of life in business, as in any human endeavor. If organizations, economies, and nations are to prosper, change must be recognized and adaptation must occur. The ability to forecast change with some degree of accuracy will enable managers to adjust more promptly and provide for more efficient resource use.

While no one can foresee the future with complete accuracy, the seeds of future change already have been planted and broad estimates of the direction and extent of change — and recommendations for action today to position the firm favorably for the future — can be made. To assist managers in better identifying the major changes that will take place in the next two decades, four specialists in the Department of Management at Arizona State University have made brief forecasts of the future in the areas of Productivity Management, Production/Operations Management, Human Resource

Uncertainty, transition, and change characterize the basic features of life in the decades ahead. If organizations are to perform efficiently and effectively under such conditions, managers must have keen diagnostic and problem-solving skills. They must be innovators, organizational designers, master strategists, and active participants in external affairs.

Harold Fearon, William Reif, William Ruch, and William Werther are all professors in the Department of Management, College of Business Administration, Arizona State University.

Management, and General Management. It is hoped that this look at the future will assist managers in assessing the impact of the changes on the organization and in developing a workable strategy for adjusting and adapting to them.

PRODUCTIVITY MANAGEMENT

One of the most pressing and pervasive problems in the coming two decades is increasing resource productivity.¹ Productivity incorporates all aspects of management of organizations and its increase or decrease has profound effects on inflation, international competitiveness, employment levels, standards of living, and business failure rates. Maintaining our current level of productivity is insufficient; productivity must increase if we are to progress and survive in the rapidly changing world between now and the year 2000.

The Nature of Productivity

Productivity is defined as a ratio of output to input. Often the term is used to describe labor productivity — the comparison of goods and services produced relative to labor content (measured as units produced per hour, sales per employee, or shipments divided by payroll).

Total firm productivity, however, is a much broader concept, since it includes all resources consumed by the firm. In addition to labor, output can be compared to capital, material, or energy. Total productivity, then, is

the output of the firm relative to the sum of labor, capital, material, and energy used. Efforts to improve productivity can be described accurately as "resource management" — *the effective and efficient use of all resources to produce salable output.*

The Problem

Productivity is often misunderstood. A corporate executive may equate productivity with profitability and attempt to judge productivity through financial statements. A plant manager may see it as production, the output side of the ratio only. An industrial engineer may see productivity improvement as a new description for work simplification. The human resource specialist relates the concept to motivation and satisfaction. The worker is often suspicious of productivity improvement programs, believing that they mean "work harder and work faster so that some workers can be laid off." Like the blind men with the elephant, each sees a part but not the whole.

Productivity should not be confused with financial performance of the firm. In a basic sense, profit is the difference between sales revenues and costs. Sales revenues are made up of quantities times prices and, similarly, costs are the sum of input quantities times their respective unit costs. If the revenue-to-cost ratio (profitability) is separated, the ratio of output quantities to input quantities is productivity. It measures the utilization of resources. The other part of the equation, the ratio of output prices to input costs, is called price recovery. It measures how much the firm is passing on cost increases to its customers and, ultimately, how much it is contributing to inflation.

Methods are being developed to measure organizational performance in terms of productivity. Eventually firms will be able to tell how much of their profit is due to gains in productivity and how much results from passing along cost increases and process inefficiencies in the form of higher prices.

With a better understanding and measurement of productivity, firms will be in a position to utilize resources more effectively. Working smarter, not harder, is the key. With sound organizational policies, productivity can lead to successful sharing of benefits by all members of the organization.

Declining National Productivity

Since the end of World War II, productivity increased at an average rate of 3.2 percent until the early

1970s. In the mid-1970s, the growth rate dropped to less than half of the previous average. In 1978, growth was one-half of 1 percent and in 1979 productivity declined by almost 1 percent. If productivity growth had maintained its earlier 3.2 percent rate, our gross national product would be an estimated \$400 billion larger.

No complete agreement exists on the reasons for the decline, but there are several major contributors. First is the changing nature of the work force; age, sex, education level, and attitudes toward work are changing.²

A second factor is interindustry shifts. A majority of the work force is now employed in service industries, which generally are more labor-intensive than manufacturing and less amenable to productivity improvement.

A third factor is government regulation. The time and resources required to assure compliance with government regulation represents a diversion from the production of goods and services.

A fourth factor is a combination of declining investment and declining research and development (R&D). The average age of plants and equipment in the United States is increasing, and older facilities are generally less productive. Cutbacks in R&D mean less innovation in product or process improvements; hence, a slowdown in productivity growth.

Although an individual firm may feel helpless in the face of these broad social problems, there is reason to be optimistic. Excessive government controls can be solved through our democratic process, and in the meantime individual firms can improve productivity through concerted efforts to react and adapt to a changing environment.

Increasing Organizational Productivity

Organizational productivity is complex; there are no simple answers. There are, however, guidelines to steer the firm toward more effective resource management.

Awareness. Becoming aware of the problem is the first step. Removing the many misconceptions associated with productivity can lessen resistance to change and focus efforts on improving the process and sharing the benefits.

Commitment. Top management must believe that productivity improvements can and should be made. A total organizational effort can only work effectively with a top-down approach.

Program. Although relatively few companies today have a formal productivity improvement program, the numbers are increasing. Changes in the formal organi-

zational structure will be needed to accommodate new positions with specific duties and responsibilities for coordinating productivity improvement efforts.

Measurement. Productivity measurement at all levels of the firm is possible. Productivity measurement systems need to be developed, refined, and integrated with financial measurement and management information systems to guide and evaluate resource management.

Innovative Management. Productivity improvement is a way of judging the performance of a worker or an organization. The success of creative management of tomorrow's work force and complex technology will be measured by whether it produces substantial growth in productivity.

PRODUCTION/OPERATIONS MANAGEMENT

While Production/Operations Management (P/OM) is central to the functioning of any organization, the period following World War II until the mid-1970s saw this activity receiving relatively less emphasis than the marketing and finance functions, which then were in vogue. However, concerns about productivity and the reindustrialization of America, and the changing geopolitical scene have again focused significant attention on P/OM as an area of needed emphasis if we are to maintain or improve our standard of living and become more competitive in the world marketplace.³

Growth of Service Industries

The service industries such as health care, personal care (like the beauty shop), and fast-food preparation will continue to increase in importance and will continue to employ an increasing percentage of the work force (probably two-thirds of the work force by the year 1990). This will cause a switch in our emphasis on manufacturing methods. The service industries have not received adequate attention in the past — they are more difficult to analyze — but service industry worker productivity, and increases in that productivity, will be one of the keys to the ability to maintain our overall standard of living in the decades ahead.

Emphasis on Material- and Equipment-Intensive Production

Greater emphasis in manufacturing will be given to material- and equipment-intensive production pro-

cesses. Presently, United States manufacturing firms spend about 57 percent of their sales income for the purchase of materials, supplies, and services; that number was 51 percent only six years ago. When dollars spent for new plants and equipment are added in, that number goes to 61 percent and will probably be 68 to 70 percent by the year 2000. This trend is occurring because of the need for manufacturers to substitute equipment for labor in order to increase productivity. This emphasis on materials and equipment may not be necessary in the economies of the lesser-developed and underdeveloped nations due to their relatively lower employee costs. The United States, however, must recognize the current emphasis and take action to control expenditures more closely for materials to provide maximum value for dollars spent if it is to be competitive.

Inventory Planning

At present, inventory represents about 30 percent of assets in a manufacturing company, and is often a larger resource investment than any other asset category (cash, accounts receivable, plant and equipment). The very high inventory carrying costs make it imperative that inventory planning and control decisions hold inventory investment within rather narrow limits. The trick is to develop planning and scheduling accuracy that will meet internal manufacturing demands and guarantee the satisfaction of the customer while minimizing inventory investment at the same time. Today's carrying cost for inventory is estimated at 30 to 36 percent of value per year, which has a pronounced effect on a firm's return on investment. Also, tight inventory control enables a firm to weather the shocks from cyclical economic downswings, since production need not be severely reduced to eliminate excessive stocks.

Production Control Systems

Better systems of controlling production schedules and resultant inventories will be perfected. Much attention is now being directed toward the use of computer-based planning and control systems, which are typically referred to as MRP (Material Resource Planning) systems. MRP systems are based on the idea of "driving" production, purchasing, and inventory systems by "dependent demands" through an interdependent system, rather than attempting to plan and control each element of the individual system independently. While such an approach has been possible for several years, three developments will make MRP most attractive in

the next few decades: (1) lowered data processing costs with the advent and application of mini- and micro-computer systems, (2) increasing costs of carrying inventory, and (3) uncertainty of material supply, which requires faster reaction times to supply interruptions and shortages.

Computer-Based Management Information Systems

The production/operations manager (P/O) will make much more extensive use of computer-based management information systems (MIS). In many firms today, the P/O manager is forced to make decisions on work and worker scheduling, allocation of scarce resources, and the application of pressure on the system, based on incomplete, inaccurate, and/or obsolete data. Production decision making moves rapidly, and the tempo will likely become faster as automation increases. Thus, firms must utilize data systems that are more responsive and which give the manager needed data on demand through a readout screen located at the workplace. The technology for this is already available.

Price Escalation

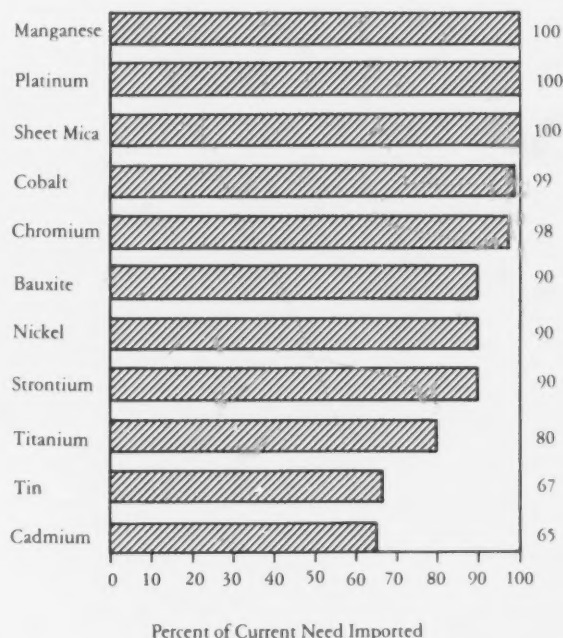
Rapid escalation of material input prices (costs) will continue. Much attention will be given, through the use of relatively sophisticated purchasing decision systems, to predict and control material costs better. Prices are likely to increase, overall, at rates substantially above those experienced in the 1960s — the long-term price increase rate over the period of 1980 to 2000 will probably average in the 5 to 6 percent range. Ways to minimize the effects of such cost increases on the major resource inputs to the manufacturing systems must be developed if United States industry is to be competitive.

Availability of Supply

Assuring material supply availability will assume a major position in corporate planning. This requires much more sophisticated forecasting techniques, consideration of technology alternates, and innovative solutions to supply availability. At present, the United States imports a major percentage of its needs for many crucial materials from foreign sources (see Figure I). If the supply of several of these items were denied to the United States, it would make the oil crisis of the 1970s look trivial.⁴ Firms must keep a much closer watch on the geopolitical situation, particularly in southern

FIGURE I

U.S. DEPENDENCE ON FOREIGN SOURCES FOR STRATEGIC MATERIAL NEEDS



Sources: U.S. Bureau of Mines; U.S. Geological Survey; A. D. Little, Inc.

Africa and the Middle East, to avoid unpleasant surprises. The possibility of developing supply sources in countries such as the People's Republic of China must be explored. More instances of backward integration, such as the G.E./Utah International merger, to protect material supply lines will take place. While the investment may be substantial, it may be the only choice to reduce uncertainty of supply. Buying firms must develop closer relations with vendors, which will be facilitated by joint computer/data systems. Incidentally, this may force a new look at existing interpretations of anti-trust regulations as they apply to combinations in restraint of trade.

Longer Planning Horizons

Manufacturing and materials planning horizons will substantially stretch out. In the past, most of the planning effort was directed at product development and marketing. While these will not diminish in impor-

tance, in the next twenty years strategy and materials acquisition planning will receive greater attention, and the need for people with these skills will be apparent. Last year the undergraduates with a purchasing/materials management specialty graduating from the College of Business Administration at Arizona State University received the highest average salary of any discipline in the College. Firms must have personnel who can do manufacturing and materials acquisition planning on a ten or twenty year planning horizon consistent with the market planning horizon. A good marketing plan will be profitable only if the firm can produce products or services as needed to meet that plan.

Many challenges face the production operations manager in the 1980s and 1990s. The competitiveness of firms, and the United States economy as a whole, will depend on the accuracy of manager forecasts, sensitivity to changes, and the ability to react and adjust managerial methods to meet the changing environment.

HUMAN RESOURCES MANAGEMENT

The management of human resources will undergo significant changes during the remainder of this century. These changes will reflect an evolution of present trends, but their cumulative impact will alter the employer-employee relationship radically.

Equal Employment Opportunity

Regardless of changing national leadership, pressures from government and affected groups will almost certainly expand the scope of equal employment opportunity (EEO). At present, only federal government contractors and agencies of the executive branch are required to develop Affirmative Action programs for the qualified handicapped. All but the smallest employers, however, can expect legally-mandated programs for the qualified handicapped in the future. Employers also can expect even more vocal pressure for equal employment opportunity from Hispanics — the fastest growing minority group. Later in the 1980s, gay rights groups are likely to demand legislative support for equal employment opportunity. Perhaps the most dramatic issue will be equal pay for *comparable work*. At present, employers must pay men and women equally for similar jobs. However, the Equal Employment Opportunity Commission (EEOC) has under active consideration a requirement that employers pay equal wages for comparable work. If this concept is

adopted, the EEOC may require employers to pay jobs that are female-intensive, e.g., secretaries or nurses, at a level comparable to jobs that are male-intensive, e.g., mechanics or staff specialists.

Benefits and Compensation

According to the United States Chamber of Commerce, fringe benefits already amount to more than one-third of employer labor costs and are growing. A continuation of this trend may cause benefits to be the major element of labor costs during the next two decades. Not only will employers be asked to pay a larger share of fringe benefit costs, but the list of benefits will grow. Likely additions include dental, optical, legal, mental health insurance, and employee assistance programs.

A growing number of organizations are adding "employee assistance programs" that offer rehabilitation, counseling, or referral to community professionals for alcohol and drug abuse, marital and family problems, emotional disorders, housing, and welfare advice for the "working poor." Many of these programs also are available to the workers' families.

In future years, more employers are likely to extend "cafeteria benefit programs" to all workers. These programs — previously reserved for top management — allow each employee to select the types and mix of fringe benefits he or she wants.

Experts in financial compensation will encounter growing problems with "wage compression," which occurs when minimum or entry level wages rise faster than the remainder of the salary structure. Compounding this problem will be continuing pressure by workers for cost-of-living raises to keep pace with inflation.

Union-Management Relations

After years of little growth, the union movement is undergoing noteworthy changes. Mergers among national unions are producing fewer, but financially stronger, labor organizations. At the same time, older union leaders are stepping aside in favor of new leaders. Armed with new leadership and improved financial strength, selected unions may be poised for significant growth, especially if they can communicate their considerable success in protecting workers from inflation through cost-of-living clauses. Since many workers and professionals have seen real wages decline, unions may discover latent but widespread support for unionization similar to that of the 1930s.

Work Schedules

For over 200 years, the number of working hours has declined. Today, the traditional five-day, forty-hour work week is undergoing change. During the next twenty years, employers can expect rapid adoption of nontraditional work schedules. These changes will include greater use of:

Flextime — Schedules that permit employees to vary their starting and ending times.

Shorter Workweeks — Schedules that allow employees to work traditional forty-hour weeks in less than five days.

Part-Time — Schedules that enable workers to work less than forty hours per week.

Job Sharing — Schedules that allow two or more employees to share a single full-time job.

Flexyear — Schedules that permit employees to work full or part-time for less than a year.

Pressure for these innovations will result from changing work attitudes and a reduction in the growth of the work force as the lower birth rates of the 1960s and 1970s begin to affect industry.

Even the tradition of "going to work" may be altered. As the work force becomes dominated by information-processing employees, more people will be able to work at home. They will form "electronic cottages" which will be "connected" to the employer through low-cost electronics such as satellite/ground station communications.

Human Resources Departments

Personnel departments are likely to experience explosive growth in size and importance. The changes previously discussed will cause them to become more involved in strategic business decisions through the development of human resources plans. Greater attention will be paid to career planning and human resources development in order to train and retain employees for the rapid changes of the next twenty years. These departments will also experience far greater pressures to justify their growing demands on employer resources.

The most significant challenge facing these staff units will be to contribute to organizational productivity. Besides improved employee communication programs, suggestion systems, and team building efforts, human resources departments will have to devise innovative ways to tap employee creativity and productivity if the national economy is to resume noninflationary growth.

GENERAL MANAGEMENT

Changes in the practice of management during the next twenty years will occur as a result of more fundamental changes in our society. Therefore, to chart the future direction of management, one must first become knowledgeable of the social, demographic, economic, and technological forces that will shape the nature and functioning of organizations.

Changing Values and Lifestyles

Work as a central life force, and dedication to the work ethic is no longer in vogue with many people. A leisure-oriented life style has replaced it, and people are actively seeking worthwhile experiences outside the work environment. This move is part of a broader trend to more hedonistic values. For those who still value work as a basic life orientation, demands for improvements in the quality of work life, including meaningful jobs and a higher degree of involvement in decisions are being made. And, personal values will increasingly be placed ahead of organizational objectives.

In response to changing values, management will be forced to place greater emphasis on human resources management and strategies for increasing worker productivity. Human resources planning, career planning, selection processes, and training and development activities will receive priority treatment. Job enrichment strategies will continue to be emphasized.

Team, or collegial, management will be practiced widely and more attention will be given to feedback systems that inform employers about organizational affairs. Formal relationships will be established in terms of work flow (horizontal) more than hierarchy (vertical). Authority by virtue of position will be deemphasized, and knowledge as a basis of authority will be emphasized. New management strategies, such as organizational behavior modifications, will be used to deal with the related issues of motivation and productivity.

Composition of the Work Force

Basic demographic trends indicate that in the year 2000 the labor force will be older, better educated, and comprised of a greater proportion of women and other minorities, and single parent wage earners. Seventy-five percent of the growth in the next twenty years will be in the 35 to 54 year age group, as compared to the 1960-80 period when 75 percent of the growth was in the under-35-year age group. Over 40 percent of the work

force will have completed at least one year of college education. Equal rights for women and minorities will continue to promote their entry into the ranks of professional employees and management.

How will management deal with the social and organizational impact of the changing role of women, minorities, older employees, knowledgeable workers, and single parents as members of the work force? One approach is to tailor work systems to meet individual needs. There will be flexible benefit plans, work schedules, work locations, and retirement options.

At the same time that extrinsic rewards, such as pay, benefits, and working conditions, are being addressed, the intrinsic component of the organization's reward system will also change to keep pace with employees' demands for higher quality work experiences. It is known that better educated workers have a different self-image than less educated workers; they have a stronger sense of self-respect, are much less tolerant of authoritarian management practices, have higher expectations of what the job should provide, will strive for individuality and independence, are less committed or loyal to the organization, and can be motivated by appeals to professional codes and service norms. If management wants more than marginal productivity from its knowledgeable workers in the next two decades, it will have to make several changes. First, greater attention will have to be given to designing self-development opportunities into jobs. Management will also have to provide more opportunities for independent thoughts and actions. In addition, management must ensure workers a more direct involvement in corporate affairs through such concepts as rotating leader positions and junior boards of directors. Finally, work systems must be created that are geared to the needs of the whole person.

Technology

By the year 2000, organizations will become even more dependent on scientific and technical knowledge and the specialists who can apply a particular knowledge base. As dependency on technology increases, there will also be an increase in technological, or job, obsolescence. In certain high technology areas, the useful life of a knowledge base will be no more than two or three years.

Organizations are built on prevailing technology. Technology, in turn, is invariably linked to the structure and processes that are involved in converting resources (dollars, people, equipment, materials, and fa-

cilities) into products and services. Therefore, any significant change in technology will cause subsequent changes in the structure of the organization.

As the rate of technological change increases, organizations will have to respond accordingly in order to remain productive entities. Their ability to respond to rapid change will be highly dependent upon the use of temporary work systems. Organizations will be designed around the tasks to be done rather than around traditional hierarchical roles and functional definitions. Temporary networks and team structures will dominate the scene and will be constantly changing to meet the requirements of new technologies and the demands of increasingly complex operating environments. These temporary work structures will be somewhat similar to today's matrix organizations, which are designed to bring technical and functional expertise quickly to bear on a project or program. One of the keys to success will be the organization's lag time from invention to innovation, or putting the technology to work in such a way that the organization realizes a return on its investment. Today, lag time is commonly measured in years; in the future, months and perhaps weeks may become the norm for organizations that want to be first on the market.

As organizations become more highly specialized, the need for coordination increases. Without it, organizations stand to lose the potential synergistic effect of applied technology. Integrative mechanisms currently in practice include temporary task teams, cross-functional teams, coordination committees, and liaison positions. To be effective, they require the establishment of horizontal and diagonal communication channels to permit direct specialist-specialist relationships, the acceptance of expertise as a legitimate base of authority, and problem-solving capabilities that permit managers to move quickly from problem identification to solution.

In viewing technological change through the eyes of the individual contributor, the primary concern will be keeping abreast of new technologies and avoiding job obsolescence. To satisfy these requirements, management will have to make greater use of sabbatical leaves and other "lifelong learning" concepts, and be willing to build educational components into job designs. By the year 2000, many employees will spend one-third to one-half of their working lives actively involved in educational pursuits to gear up for the next generation of technology. Both individuals and organizations will have to change their thinking about what constitutes a working career.

Governmental and Societal Intervention

There will be a growing interdependency among all social institutions, particularly business, government, and education. At the same time, there will be a blurring of the traditional boundary between the public and private sectors. Government, business, and education will become, in a sense, a partnership working toward common goals.

The expanded role of government in the private sector will result in its: (1) guaranteeing the survival of key industries; (2) actively participating in high-risk, long-term ventures, such as energy alternatives; (3) increased decision making concerning resource allocations, such as subsidizing education and not health care; (4) significantly decreasing the range of acceptable competitive behaviors; and (5) assuming a larger role in interregional economic planning.

The related concepts of social responsibility, social accountability, and corporate constitutionalism will take on added significance. The corporation as a public trust, and management as trustee, will become a standard against which society will judge business' performance. Business will be expected to not only provide economic inputs to society, but to also assume a broader social function. For management to perform well in its new role, several changes must occur. First, managers will have to be more aware of the social implications of business decisions. In the past, business decisions were primarily made according to economic and technological criteria. In the future, social criteria will be weighed heavily in selecting alternatives. Social cost accounting will be as widespread as environmental impact studies are today. Income statements will account for social costs as business expenses. The concept of social profit, not economic profit, will be emphasized. Human resources accounting will be widely practiced, and the value of human resources will be reported and accounted for on balance sheets and annual reports in much the same way that plant and equipment and other fixed assets are treated today.

As more constituent groups become directly involved in business decisions, another dimension of complexity will be added to the decision-making process. Government will most likely insist that these constituent groups be represented on boards of directors and other policy-making groups. It will be common to see government, labor, education, consumer groups, community groups, minority groups, environmental groups, and quality of life groups all represented and demanding "ownership" rights.

Organization Size and Complexity

Within the next two decades, no more than two-hundred to three-hundred multinational firms will account for 50 percent of the world's output. This is realistic when one considers that General Motors is currently the twenty-second largest economic entity in the world, and there are other multinationals not far behind.

As organizations continue to increase in size, be they corporations, universities, labor unions, or government agencies, more questions will be asked — Can they be managed in a cost-effective manner? At what point does size alone dictate the beginnings of diminishing economic and social returns? Complexity tends to correlate with size. As the number of organizational components grows, the number of interactions increases geometrically. This, coupled with technology, will eventually create a situation in which people may lose their ability to comprehend what is happening in the series of dynamic events that constitute their work environment.

Two problems also related to size are inertia and dependence. As organizations get larger, they tend to resist changes in purpose or direction. Dependence relates to what happens if the organization fails. To illustrate, many businesses operate on the assumption that they have to be first or second in any particular market to realize a sufficient return on invested capital to survive in the long run. If this is true, and there is growing evidence that it is in high-technology industries, one can logically conclude that in the near future only a few firms will dominate most industries. Now, what if one fails, and it was the sole source of supply for health care, or automobiles, or building materials? Size can increase dependency by reducing the alternatives that are available.

Large-scale organizations can be managed, but not necessarily the same as in the past. One way to deal with the size and complexity issues is to rely more heavily on computer-based management information systems. They will handle most routine or programmable decisions, many of which are currently being made by technicians and lower- and middle-level managers. Decision makers will have instant access to information needed for developing and analyzing alternatives for nonprogrammable decisions. Also, simulation models will be widely used by managers to "try out" decisions before they are actually implemented.

Computer-based information systems and communication networks will lead to decentralization. This

will allow the organization to improve the quality of decisions by moving the decision-maker to the point of implementation. At the same time, the advantages of economies of scale and effective utilization of functional expertise will not be compromised if all components of the system are linked to each other and the common data base. These resulting decentralized decision centers will not be rigid structures but will be added and deleted, contracted and expanded, and located and relocated as strategic requirements change. The organization may be similar to that of a honeycomb, with many cells operating as semiautonomous decision centers, linked together by a computer-based network. As conditions dictate, the organization will change shape but the integrity of the system will remain intact.

Turbulence As a Way of Life

Turbulence is expressed by words such as "the only constant is change," "managers make decisions under conditions of uncertainty," and "we are always in a state of transition." Uncertainty, transition, and change characterize the basic features of life in the decades ahead. The transitory state will become the norm and will closely approximate the systems concept of dynamic equilibrium. Change is related to time compression, especially as it applies to the rapid obsolescence of knowledge bases. Uncertainty is indicative of complex organizations operating in a complex environment with limited understanding of the critical factors and their causal interactions. If organizations are to perform efficiently and effectively under such conditions, managers must have keen diagnostic and problem-solving skills. They must be innovators, organizational designers, master strategists, and active participants in external affairs. Quick reaction times must be built into operating and technical systems and proactive capabilities

developed for shaping external forces to ensure the long-run survival of the organization.

Managers will turn increasingly to strategic planning as a stabilizing force. Strategic planning is the process of setting objectives and developing action plans that anticipate and take into consideration internal and external forces or events that can affect the achievement of organizational objectives. Strategic planning in the year 2000 will require environmental scanning, e.g., technological forecasting, and interorganizational information systems capabilities far superior to today's monitoring systems.

Managers will also engage in more cooptative and coalitional relationships to control external forces and events that can affect organizational performance. Conscious attempts will be made to absorb outside forces into the structure of the organization and thus bring them under control. For example, including members from outside interest groups on boards of directors is one form of cooptation. The business-government-education partnership is a good example of a coalition. None of the parties are free to set objectives in a unilateral fashion, thus protecting the mutual interests of all parties concerned.

CONCLUSION

While not able to control the future, the manager can exert influence and adapt to a changing environment. Being aware of the changes taking place now and those likely to occur over the next two decades in the areas of Productivity, Production/Operations, Human Resources, and General Management will assist the manager in charting a course which will enable organizational survival and success. To do otherwise, in an age of transition, turbulence, and almost constant development and challenge, would be foolhardy for the astute manager and disastrous for the firm.

¹The February, 1981 issue of *Arizona Business* contained several articles on productivity.

²Some of these changes are discussed in the last part of this article which addresses trends in general management.

³"Schools Again Offer Courses on Production," *The Wall Street Journal*, January 26, 1981, p. 23, discusses the increased emphasis

now being focused on P/OM by the business schools.

⁴"How We're Fixed for Strategic Minerals," *Fortune*, Vol. 103 (February 9, 1981), pp. 68-70 discusses the United States' tenuous position in supply of platinum, titanium, manganese, chromium, and cobalt.

Opinions of Arizonans Toward the Mining Industry

STEPHEN W. BROWN
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Arizona's mining industry is a major contributor to the state's livelihood employing over 23,000 people and contributing \$5.6 billion to personal, business, and government income.¹ These income figures represent actual dollars paid for services and supplies along with recirculated dollars.

Such a large industry exerts an impact beyond its immediate boundaries. The mining industry's size and scope are noticeable and generate varying forms of public reaction. Some people have voiced positive or negative concerns over various behaviors and practices of the industry; others are only casually familiar or unfamiliar with mining activities.

The concerns that do exist relate to areas such as land and water use and environmental pollution. These concerns do not necessarily indicate that Arizona citizens are up in arms about the mining industry; opinions vary from person to person and from region to region in the state. Nevertheless, public opinion does influence industry behavior explicitly and implicitly.

Mining has a positive image in the minds of most Arizonans as a large industry that contributes to the state's economy. Nevertheless, a small portion of the state's residents continue to voice concerns about environmental effects and working conditions.

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Federal, state, and local government regulations, for example, are affected by these opinions. The regulations, in turn, contribute to the political, economic, and social environment in which the mines must operate and compete.

The objective of the study was to examine the opinions of Arizonans toward the mining industry, and to analyze observations among different categories of people. More specifically, opinions were examined for both the sample as a whole and for selected sample subsets.

METHODOLOGY

To fulfill the study's objective, a public opinion survey was conducted by means of a telephone questionnaire to a sample of 992 adult residents of Arizona. The sampling was allocated across the state on a proportionate basis. With this procedure, people from all geographic areas are represented in the study as follows: Metropolitan Phoenix, 549; Metropolitan Tucson, 241; nonmetropolitan areas, 202.²

A pretested questionnaire was used to collect data via telephone interviews. Experienced telephone interviewers, who administered the questionnaire,³ participated in an extensive training session, and were supervised on a daily basis.

No pressure was used to encourage respondent participation, but over three-fourths of the people contacted chose to participate in the survey. Twelve percent of the completed interviews were validated to ensure

data authenticity. The validation procedure was carried out by telephone callbacks to selected respondents by the interviewers' supervisor.⁴

The profile of almost one thousand respondents, shown in Table 1, conforms closely to the population characteristics of Arizona residents as a whole. The respondents represent a good cross-section of newcomers versus medium to long-time residents, age groups, family sizes, educational levels, income levels, geographic areas, and sexes.

TABLE 1
RESPONDENT PROFILE

	Percent of Total
<i>Length of Arizona Residency</i>	
Under 1 year	6.7
1 to 5 years	24.3
5+ to 10 years	16.4
10+ or more years	52.1
<i>Years of Education Completed</i>	
Less than high school	8.7
High school or trade school graduate	34.2
Some college or post high school	31.4
College graduate	24.9
<i>Age Distribution</i>	
Under 20	6.5
20-29	24.1
30-39	19.1
40-49	14.6
50-59	13.2
60 or over	21.5
<i>Family Member Has Worked in Mining</i>	
Yes	20.5
No	78.6
<i>Family Member Has Lived in Mining Community</i>	
Yes	22.0
No	76.8
<i>Annual Household Income</i>	
Less than \$5,000	6.8
\$5,000 - \$9,999	10.8
\$10,000 - \$14,999	14.5
\$15,000 - \$19,999	14.3
\$20,000 - \$29,999	20.1
\$30,000 - \$44,999	12.4
\$45,000 or more	6.2
Refused to answer	14.8
<i>Place of Residence</i>	
Metropolitan Phoenix	55.3
Metropolitan Tucson	24.2
Other (see text)	20.5
<i>Sex</i>	
Male	47.6
Female	52.2

Source: Survey conducted under direction of the authors.

On the surface, the percentages in Table 1 for working in mining and living in a mining community may seem high. It should be noted that the percentages do not mean that over 20 percent of the respondents had worked in a mine and/or lived in a mining community. The questions simply asked if any family member had these kinds of exposure to mining. The percentages do indicate, however, that approximately one out of five survey participant families had some direct contact with mining. This high level of exposure to the industry seems to indicate a population fairly sophisticated in its knowledge of the industry.

One final comment is noteworthy on Table 1. Over 85 percent of the respondents provided the interviewers with their family income. This is a high percentage and is one indication that the questionnaire itself helped establish rapport with the respondents and that the interviewers administered the survey in a professional manner. This type of rapport goes a long way toward ensuring reliable responses.

SURVEY RESULTS

In this section, the findings from the survey are presented. Overall responses are discussed along with how some of the findings varied by selected respondent characteristics.

Perceptions of Leading Industries

Table 2 illustrates what the public considers to be the largest industries in the state. The question associated with these data was asked in an unaided recall format. This means that the respondents were not read a list of industries; instead, they were simply asked, "In your opinion, what are the largest industries in

TABLE 2
PERCEIVED SIZE OF ARIZONA INDUSTRIES

	Percent of Total*
<i>What are the largest industries in Arizona?</i>	
Mining	62.5
Agriculture	31.1
Electronics	25.1
Tourism	22.6
Retailing	4.0
Banking (financial)	2.0
Other	31.1

*Adds to over 100 percent because of multiple responses to the question.

Source: Survey conducted under the direction of the authors.

Arizona?" Over twice as many participants perceive mining as a large industry as the next most often mentioned group. The fact that nearly two-thirds of the people mentioned mining without any coaching clearly shows that the industry's significance is well known. Next to mining, agriculture (31.0 percent), electronics (25.1 percent), and tourism (22.6 percent) were noted frequently. Close to a third of the participants volunteered a variety of industries (e.g., transportation, health care, manufacturing in general) that were lumped into the *Other* category because of their infrequent mention or lack of specificity.

Relating these findings to respondent characteristics shows that as length of residency, education, and income increase, mining is more likely to be recognized as a large economic force in the state. As would be expected, having a family member who has worked in mining leads to a greater awareness of the industry's significance. The results of the study also show that people from Greater Tucson and the nonmetropolitan areas of the state view mining as having a greater impact than do residents of metropolitan Phoenix.

Perhaps more important than how large an industry is viewed is its public image. Table 3 shows the degree of favorableness associated with each of the state's major industries. With the exception of the utilities, all the groups are highly regarded. Agriculture has the most favorable image followed closely by electronics and mining. Parenthetically, if the "very" and "somewhat favorable" ratings are combined, electronics would actually become the most favorably viewed industry. It should also be noted that electronics generated the fewest negatives.

Mining's positive image is especially significant since the industry is viewed as being large by such a

sizable segment of the sample. "Largeness" sometimes connotes negatives in the minds of some individuals, but this is evidently not the case with Arizona's mines. Overall, the industry's image does not deviate much between respondent groupings. Obviously, industries which have engendered strong favorable public images should do everything possible to maintain, or even enhance, those images. The mining industry in Arizona does, in fact, engage in just such public relations.

General Thoughts on Mining

Before proceeding into more specific mining questions, the respondents were asked what positive and negative thoughts, if any, they had about mining. Both of these questions were asked in an open-ended (e.g., unaided recall) manner.

Many positive thoughts toward the industry were elicited (see Table 4). The conditions associated with

TABLE 4

GENERAL THOUGHTS ON MINING

	Percent of Total*
<i>Positive Thoughts About Mining</i>	
Pay good wages/salaries; good working conditions	40.0
Provide employment/jobs	33.2
Contribute to state's economy; pay taxes	29.4
Mine for important minerals/resources	12.0
Community service/contribution	5.4
Maintain ecology/environment	3.7
Other	7.5
<i>Negative Thoughts About Mining</i>	
Pollution of air or water	22.2
Damaging/destroying land	18.4
Working conditions (safety, strikes, etc.)	9.9
Other	7.3
<i>Minerals Noted as Being Mined in Arizona**</i>	
Copper	89.4
Silver	35.9
Gold	31.5
Coal	14.3
Uranium	10.4
Turquoise	7.0
Oil	1.3
Other	20.8
Don't Know	7.5

*Multiple reasons were possible for all three data sets in this table. For this reason, the first and third set sum to over 100 percent.

**All of the minerals listed are mined in the state, with copper accounting for the vast majority of mining production.

Source: Survey conducted under the direction of the authors.

TABLE 3

PUBLIC IMAGE OF ARIZONA'S MAJOR INDUSTRIES

How favorable or unfavorable are your opinions of the following Arizona industries?			
	Very Favorable	Somewhat Favorable	Unfavor- able
Banking	51.1	33.6	15.4
Electronics	69.9	26.3	3.8
Manufacturing	57.7	32.0	10.3
Mining	69.7	22.7	7.7
Agriculture	74.0	19.0	7.0
Utilities	24.4	24.6	50.9

Source: Survey conducted under the direction of the authors.

working in mining (especially the comment "good wages") were mentioned by 40 percent of the sample. The actual provision of jobs was noted by one out of three respondents. Close to one-third of the respondents indicated the contribution the mines make to the state, including the tax support. The only other frequent observation was the industry's search for important minerals and resources. Only 12 percent of the sample failed to volunteer one or more positive comments.

As can be discerned from Table 4, far fewer negative than positive comments surfaced. Over one out of five respondents were critical of the pollution of air or water. Damaging and destroying the land was mentioned by 18.4 percent of the participants, and 10 percent of the sample found fault with working conditions associated with mining employment. Nearly one-third of the people could offer no negative comments. Implications are that the industry is very favorably viewed as a potential or real employer. The environmental and working condition concerns indicate potential areas of action.

The last part of Table 4 shows how familiar Arizonans are with the minerals being mined in the state. Nearly all of the public is aware that copper is mined. The awareness of other minerals is much less with a third mentioning silver and gold, and 14.3 percent indicating coal.

Attitudes Toward Mining

Table 5 shows the survey participants' attitudes toward various factors associated with the mining industry. This attitudinal data is valuable in assessing public sentiment toward the industry. The respondents were read the statements on the left hand side of the table and then were asked if they agreed or disagreed with each statement.

The responses to the first statement clearly demonstrate that Arizonans think of mining as being good for the state's economy. The next statement indicates that a slight majority feel the mines are doing a good job of controlling pollution. Nevertheless, one out of four respondents disagreed with this statement, further indication that this should be an area of action and public relations.

People with education beyond high school were less likely to feel that the mines have done a good job of controlling pollution, and a third of the college graduates disagreed with the statement. Concurrence with the statement also varied directly with a person's

TABLE 5
ATTITUDES TOWARD MINING

Statement	Agree	Neither Agree Nor Disagree	Disagree	Don't Know
A. The mining industry is good for Arizona's economy. . . .	97.6	0.6	0.8	1.0
B. Overall, the mining industry has done a good job of controlling pollution.	54.1	10.7	26.1	9.1
C. The mining companies do a good job of supporting their communities.	76.6	4.2	6.3	12.8
D. Mining companies should be encouraged to explore and mine government controlled land for minerals. . .	69.9	7.8	16.4	5.5
E. Overall, the mining companies are a good place to work.	50.3	7.1	13.0	29.5
F. The mining industry should be heavily regulated by government.	20.5	7.7	67.2	4.6
G. Mining companies should pay higher taxes than other companies in Arizona.	7.6	3.4	83.4	5.7

Source: Survey conducted under the direction of the authors.

age — the older the respondent, the more likely they are to feel that the mines have done a good job. Families with work experience in mining are more likely to think that the industry is doing well in combating pollution, as are people living outside the state's two population centers. Nearly a third of the people in Tucson do *not* feel the mines are doing a good job in controlling pollution.

The public's awareness of the mines' support of their communities is seen in Statement "C" in Table 5. As it becomes more difficult to find valuable minerals on private land, some talk of exploring and mining public land has occurred. The public's support of using public land for this purpose is evident in Statement "D". The higher the educational level, the less likely the support for mining on public land. Age does not seem to influence the "agree" responses to the statement. Nevertheless, younger people are more inclined to oppose activity on government property. In terms of geographic areas, the strongest support for the proposal comes from Phoenix and the nonmetropolitan communities. One out of four Tucson respondents oppose the idea.

Statement "E" in the table indicates that close to a third of the sample respondents are unfamiliar with the work environment at the mines. Of those familiar, however, most feel that mining companies are a good

place to work. Among people in the state for less than ten years, however, only 40 percent feel the mines are a good place to work. Agreement with the statement is highest among people with no post-high school education and over 40 years of age. Close to one-third of the people under 20 disagree with the statement. As one would expect, families with mining work experience are especially supportive of the companies as a place to work. A majority of Tucson and nonmetropolitan participants agree with the statement, while 42.5 percent of the Phoenixians concur.

The last two items in the table pertain to mining and government. The state's conservatism is reflected in the results to Statement "F". Most survey participants do not feel the mines should be heavily regulated. Furthermore, the last statement indicates that respondents believe mining companies should pay the same taxes as other companies.

Knowledge of Mining

The results presented in Table 6 indicate that Arizonans are reasonably familiar with the industry. Nevertheless, only a small percentage of the people know how much of a return the average mining company makes on a dollar after taxes. As would be expected, over one-third of the participants responded "don't know," when asked this question.

The second set of data in the table demonstrates a positive public feeling toward mining company profits. A majority stated that profits are reasonable and just over 10 percent felt that they were insufficient.

Water is a valuable commodity in Arizona and its use and abuse often raises criticism. In the past, the Mining Association has advertised that the industry uses less than 3 percent of the state's water. The third set in Table 6 shows that 35.2 percent of the respondents were correct in judging mine water usage, while another 26.3 percent indicated a usage of 5 percent of the state's water.

The three true-false statements at the end of the table demonstrate knowledge about important industry characteristics. A majority of Arizonans apparently are familiar with the relative productivity of the state's copper mines, the small amount of land used for mining, and the government's control over a majority of the state's land.

Environmental Tradeoffs

As it becomes increasingly difficult to mine for copper and other necessary minerals, the relaxing of various

TABLE 6
KNOWLEDGE ABOUT MINING

	Percent of Total
<i>How many cents out of each dollar of sales do you think the average mining company makes after taxes?</i>	
0-5 cents	17.7
6-10 cents	11.7
11-15 cents	7.1
16-25 cents	8.3
26-35 cents	6.0
36-45 cents	3.2
46-55 cents	4.5
Over 55 cents	4.5
Don't know	36.9
<i>Do you think mining companies as a whole make too much profit, a reasonable profit, or not enough profit?</i>	
Too much profit	7.7
Reasonable profit	63.1
Not enough profit	11.3
Don't know	17.9
<i>Of all the water used in the state for all purposes, would you guess that the mines use 3 percent, 5 percent, 10 percent, 20 percent or more than 25 percent?</i>	
3 percent	35.2
5 percent	26.3
10 percent	15.6
20 percent	6.7
More than 25 percent	5.2
Don't know	11.0
<i>True-False Statements**</i>	
	True False Don't Know
A. Arizona produces more copper than all the other states combined.	72.2 16.3 11.5
B. All mining activities in Arizona are conducted on about one-fourth of 1 percent of the land in the state.	63.4 14.9 21.7
C. Over 70 percent of the land in Arizona is owned by the government.	75.8 12.5 11.5

* Arizona's mines use approximately 2.7 percent of all the water used in the state.

** The correct answer to all three of the true-false statements is "true."

Source: Survey conducted under the direction of the authors.

traditional standards have been discussed. Table 7 explores the respondents' reactions to scenarios involving mining on public land and relaxing pollution standards.

Most people would favor the mining for minerals on public land if nearly all essential minerals had been extracted from private land in the state. Length of residency, education, sex, and exposure to mining appear

TABLE 7

OPINIONS ON ENVIRONMENTAL TRADEOFFS

Scenario	Strongly Favor	Somewhat Favor	Not Favor	Don't Know
A. Assume that nearly all the essential minerals have been mined from the private land in Arizona. Would you favor the mining for minerals on public (government) land?	50.1	23.6	15.4	6.0
Would you favor the mining for minerals in wilderness areas?	21.8	28.6	50.1	4.2
B. Assume that a relaxing of air and water pollution standards would be helpful in stimulating economic growth. Would you favor such a relaxation of pollution standards?	18.5	17.4	60.3	3.8

Source: Survey conducted under the direction of the authors.

to have little impact on opinions. On the other hand, greater support is shown for the idea as age increases, with the strongest opposition coming from those under 30 years old. Rising family incomes can be readily associated with more support for the proposal. It is interesting to see the degree of support vary among the state's two major cities. While close to 60 percent of the Phoenix residents "strongly favor" mining on public land, only one-third of the people from Tucson responded in a like manner. It should be added, however, that 41.4 percent of the Tucson participants "somewhat favored" the idea. It should also be noted that support for mining on public land drops substantially if the land is in wilderness areas. As shown in the table, half the survey participants are opposed to mining in such areas.

The last scenario in Table 7 reveals a strong preference for the maintenance of air and water standards even if it results in difficulties in stimulating economic growth. Newcomers are the only group where less than half are opposed to this idea. As a matter of fact, one out of four new residents actually support relaxing pollution standards. Different opinions are also seen among educational levels and age groups. Opposition to the idea mounts as education increases, and relatively more resistance is also seen among those under thirty years of age. Opposition drops below 50 percent for the two oldest age classes. On a geographic basis, strongest disagreement toward the proposal comes from Tucson. These findings seem to indicate a

stronger public relations effort should be directed toward younger adults and Tucson residents. These efforts accompanied with evidence of real environmental concern on the part of the industry could go a long way toward enhancing the industry's future goodwill.

Mining Company Awareness

In this last section, the public's awareness of advertising and mining companies is explored. Looking first at advertising, most respondents are aware of some promotion pertaining to the mining industry in Arizona (see Table 8). However, when asked to recall, without any assistance, the slogans used in the advertisements, just over half could recall none. Of the slogans that were remembered, none were recalled by more than 7 percent of the sample.

TABLE 8

AWARENESS OF ADVERTISING AND MINING COMPANIES

	Percent of Total
<i>In the past year or so, do you recall having seen, heard, or read any advertisements about the mining industry in Arizona?</i>	
Yes	78.8
No	20.2
Don't know	1.0
<i>Can you recall the slogan(s) used in these ads?</i>	
Can't recall any slogans	53.1
"Arizona's Mines, we live here too"	6.9
"Phelps Dodge, it means a lot more than just copper"	3.8
Other	29.2
<i>Can you recall the names of any mining companies in Arizona:</i>	
Phelps Dodge Corporation	29.1
Magma Copper Company	20.0
J. Kennecott Copper Corporation	17.9
The Anaconda Company	11.7
Duval Corporation	10.7
Inspiration Consolidated Copper Company	7.4
ASARCO, Inc.	7.3
Anamax Mining Company	7.1
Cypress Mines Corporation	2.2
Hecla Mining Company	2.1
Amax Arizona, Inc.	2.0
Lakeshore Mines (or Noranda)	0.1
Ranchers Exploration & Development Corporation	0.1
Other	18.4
Don't know	37.2

Source: Survey conducted under the direction of the authors.

Respondents were asked if they could name any mining companies in the state. Nearly 40 percent could not remember any firms. Of the companies recalled, Phelps Dodge was the most well-known (29.1 percent), followed by Magma Copper (20.0 percent), Kennecott Copper (17.9 percent), The Anaconda Company (11.7 percent), and Duval Corporation (10.7 percent). It should be noted that this was an unaided recall question, meaning that the respondents were not provided with any company names.

Overall, Arizonans have an essentially positive image of the mining industry. Mining is recognized as a large industry, and one that contributes to the state's economy. The citizenry is quite knowledgeable about various aspects of the industry. Despite the public's overall favorableness toward mining, the companies should be aware of certain areas of concern that do exist. These concerns, however, are more than balanced by a pro-business and pro-mining orientation on the part of state residents.

¹*Arizona: Copper Capital, U.S.A. 1978* (Phoenix: The Arizona Mining Association, October 1979), p. 10.

²Sampling from the nonmetropolitan areas included the following communities: Bisbee-Douglas 20, Casa Grande-Coolidge 17, Clifton-Morenci 8, Flagstaff 29, Globe-Miami 11, Lake Havasu City-Kingman 16, Nogales 10, Prescott 16, Safford-Duncan 8, Sierra Vista 21, Winslow-Holbrook 12, and Yuma 34. For purposes of analysis,

results from these communities are classified as nonmetropolitan.

³Arizona State University graduate students conducted all of the interviews except for those administered in the southern part of the state (including Tucson). A professional field interviewing firm conducted these interviews.

⁴All interviews were completed in May and early June 1980, before the mining strike.

Latin American Subsidiaries and Social Responsibility

JOHN D. WHITT

Most countries are taking a close look at the manner in which corporations assume their responsibilities to society. Until a few years ago, it was considered that such responsibilities consisted primarily of abiding by the law, employing labor, purchasing raw materials, and providing a usable service or product. More recently, however, some writers have asserted that the modern corporation is considered to be social in nature and that its responsibilities extend to all segments of society.¹

Corporations in most capitalistic industrialized nations are increasing their involvement in social responsibility activities and are periodically reporting on the socially oriented activities in which they are engaged. It is likely that multinational subsidiaries located in developing countries have more reasons than do their domestic counterparts for involvement in social responsibility performance, because of the suspicion with which they are viewed by the host publics and governments.² Foreign subsidiaries may find that by creating an atmosphere of goodwill through involvement in social development, they create a more amiable setting

when dealing with the host governments on the sensitive matters of regulation of foreign businesses.

Before proceeding further with social responsibility, it is helpful to establish a definition. Professor Raymond Bauer of the Harvard School of Business stated, "Corporate social responsibility is seriously considering the impact of the company's actions on society and operating in a way that balances short-term business needs with society's long-term needs, thus ensuring the company's survival in a healthy environment."³

Another definition of social responsibility was made by Stanley G. Karson, Director of Social Responsibility of the Institute of Life Insurance: "It is the commitment of the corporation, conscious of its interdependence with the community, to use its available resources in such a manner that they will impact positively on society."⁴ Some authors and business people hold a very broad view of social responsibility that includes all activities involved in employment of human and material resources for the purpose of earning a profit.

Caterpillar Tractor Company classifies its social responsibility activities into three categories, as given by Lee L. Morgan, chairman and chief executive officer of that firm.⁵ The three areas can generally be classified as normal economic functions, fair business practices, and community involvement:

At Caterpillar, we define three categories of corporate citizenship. The first involves pursuit of daily business affairs — the "basics" of private enterprise — such as developing desired goods and services, providing jobs and training, in-

In order to obtain information on the current state of social responsibility involvement of foreign affiliates in Latin America, a survey was conducted among respondents with business experience in that area. This article reports the results of that survey.

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vesting in facilities, dealing with suppliers, paying taxes, attracting and holding customers, advancing technology, earning a profit.

The second category involves the way these daily business affairs are implemented. This category emphasizes conduct of business in a way that is socially responsible. It isn't enough to design, manufacture, and sell useful products. Business should, for example, employ people without discrimination, see to their job safety (and safety of its products), help protect environmental quality, and conserve energy and other valuable resources.

The third category relates to initiative beyond our operations — such as helping solve community problems. To the extent our resources permit — and if a host community wishes — we participate selectively in projects to improve community life.

Many developing host countries are beginning to demand yet another type of social responsibility from foreign companies operating within their borders — disclosure of activities and policies that can have a material effect on the balance of payments, currency valuation, and general economic stability of the country. The United Nations Transnational Center, the Organization for Economic Cooperation and Development (OECD), and others⁶ have proposed that multinational corporations disclose to the public information on the following: structures of the enterprise, showing location of affiliates with percentage of ownership; operating results by geographical area and product line; movement of working capital funds and foreign loan payments; significant new capital investment by area, with sources of funds; policies on intragroup pricing; new jobs created by geographical areas, with costs; details of employee training; and taxes paid to governments; and dividends, interests, and royalties to owners.

DEGREE OF INVOLVEMENT

Many business people feel that a firm is fulfilling its social responsibility if it carries out normal economic functions (first category) in a legal and prudent manner. Enrique Uhthoff, an executive at Banco Internacional and a respected figure in the Mexico City financial community, said, "I don't think a firm should be overly concerned with its image or relationship evolving from community service involvement. The high taxes it collects obligates the government to provide for all of the needs of a community." Uhthoff feels that companies that spend their funds to donate park benches are doing little more than taking money out of their stockholders' dividend checks.⁷ Ruiz Galindo, Jr. pro-

minent businessman, believes that social responsibility of business is to be "successful, efficient, and profitable, to assure permanence and growth as well as the efficient production of goods and services."⁸

Yet the research discussed later in this article showed that most business people believe that multinational affiliates in developing countries should get involved in socially responsible activities beyond the normal economic functions. Lloyd L. Halstead, President and General Manager of Ford Motor Company of Mexico stated:

It is undeniable . . . that negotiations with government have a better chance of success when a company is known not only to be concerned with the host country's social problems and needs, but to have taken positive action to contribute solutions to social and community problems.⁹

In viewing the guidelines published by the United Nations, the OECD, individual business firms, and public accounting firms, one can gain much advice concerning recommendations with respect to social responsibility of business firms; yet it is apparent that these guidelines were designed primarily for domestic operations within industrially developed countries.

It is possible that some of the activities proposed in the guidelines for business firms in general, if practiced by foreign subsidiaries in some developing countries, could damage relations with the host country governments, or could result in wasted efforts.

The American Chambers of Commerce in individual Latin American nations have been working on suggested social responsibility guidelines and policies to fit their particular host countries and regions.

SURVEY OF SOCIAL RESPONSIBILITY

In order to obtain information on the current state of social responsibility involvement of foreign affiliates in Latin America, a mail and personal interview survey was conducted among respondents with business experience in that area. The following categories were covered: Conservation of Energy and Environment; Fair Treatment of Minorities and Other Disadvantaged; Employee Welfare and Training; Community Involvement; and Disclosure of Strategies, Policies, and Activities which Significantly Affect National Economic Stability.

Research Methodology

This study concerning Latin America used two separate surveys. One was a mail survey sent to thirty-

two organizations consisting of the following:

*Group I: Eight headquarters of multinational firms with affiliates in Latin America. They were requested to answer for all of their Latin American affiliates taken as a whole.

*Group II: Thirteen Latin American affiliates of multinational firms, selected at random from lists of affiliates furnished by three U.S. multinational firms.

*Group III: Seven American Chambers of Commerce in Latin America, whose addresses were available. These Chambers of Commerce were requested to answer for all their U.S. multinational affiliate members taken as a whole.

*Group IV: Eight Latin American offices of an international public accounting firm, which represents all of that firm's offices in the region. They were requested to answer for all of their U.S. multinational affiliate clients taken as a whole.

The percentages of responses given in Table 1 refer to this mail survey. It will be noted that group II represents direct responses. Groups I, III and IV represent indirect responses, yet each response represents a number of affiliates.

TABLE 1
SURVEY RESPONDENTS

Topics	Number of Questionnaires Answered			
	Group I	Group II	Group III	Group IV
Environment and Energy	5	10	6	6
Treatment of Minorities	5	4	5	6
Employee Welfare & Training	5	10	6	6
Community Involvement	5	10	6	6
Disclosure of Strategies, etc.	5	3	5	6

Source: Survey by the author.

The other survey consisted of personal interviews with (a) Three headquarters of United States multinational firms, (b) The American Chamber of Commerce at Mexico City, (c) Mexico City and Guadalajara offices of four international public accounting firms, (d) eleven multinational affiliates in Mexico City, two of which are Latin American regional headquarters. Because this personal interview survey was quite subjective, it was used only to serve as a check on the reliability of responses of the mail survey, and to obtain information for additional observations.

Responses

Environment and Energy. Affiliates generally make only slight mention in their annual published reports

about their activities in the areas of preservation of the environment and conservation of energy. Respondents indicated that generally the affiliates take no significant action in these areas except that required by law. The environmental problems do not seem to be as serious as they are in industrially developed nations. The energy problem is handled by market prices in most host countries.

Fair Treatment of Minorities and Other Disadvantaged. Some affiliates maintain policies with respect to fair treatment of minorities, yet respondents indicated that most governments do not favor public discussion of the matter. Respondents (40 percent of Group I, 50 percent of Group II, 30 percent of Group III, and 50 percent of Group IV) indicated that foreign affiliates do not make public disclosure of action they may take, if any, in any area of human rights. Governments are not inclined to admit the existence of violation of human rights within their countries.

Employee Welfare and Training. While United States domestic firms doubtlessly spend much more money per employee on employee welfare and training than do foreign affiliates, they probably do so primarily because of requirements of law and labor contracts. Foreign affiliates in Latin American countries seem to take greater initiative in this area than do their domestic counterparts, as indicated by 80 percent of Group I respondents, 80 percent of Group II, 80 percent of Group III, and 50 percent of Group IV.

Eastman Kodak sent thirty-one Mexican employees, along with their families, to the United States for specialized training before opening a new film manufacturing plant in Guadalajara, Mexico.¹⁰

Approximately 5 percent of Motorola's employees in Latin America receive company classes in electronics, human relations, and languages. Employees continue their university level studies through Motorola scholarships.¹¹

Chrysler of Mexico uses nearly 100 instructors to give courses of three days to six months or longer to nearly 2,000 Chrysler workers. The thirteen-year-old program teaches management and classes in thirty-five other areas. A 300-student primary school is planned for children of employees at the Toluca Chrysler plant. It is designed to achieve family integration; employees can take their children to school when they go to work and pick them up after their shift is over. The school program will upgrade the educational level of future employees of Chrysler, since many children of employees in this area are expected to work for Chrysler when they grow up.¹²

Community Involvement. All respondents indicated involvement by all affiliates in community welfare, but largely in a passive manner such as making contributions to organized charitable, health, and educational institutions. A few affiliates (about 5 percent) conduct their own community projects. For example rabies was nearly eradicated in Argentina in a program by Avon Products.¹³ Colgate-Palmolive attracts up to 800,000 participants each year in the Colgate Olympics of Brazil.¹⁴ A new kindergarten for 500 preschoolers in Chile was financed by the local Dow affiliate. Ford Motor Company of Mexico aims its civic affairs efforts at the marginally productive sector of the population. Ford's program includes schoolhouse construction, agricultural training, and disaster assistance. Its programs are carried out in cooperation with the host country government in many cases.¹⁵

Disclosure of Strategies, Policies and Activities which Significantly Affect National Economic Stability. Responses indicated that over 50 percent of affiliates are publicly disclosing their codes of ethics, details of employee training activities, exports, and import substitution. However, respondents indicated that no affiliate nor multinational headquarters reports fully and voluntarily on items such as capital movements, transfer pricing policies, and operating results by segments. Host countries need such information to be able to anticipate tax revenues and balance of payments and currency problems, but it is doubtful that U. S. multinational firms will ever willingly publicly divulge sensitive information of this nature for it may give an advantage to their competitors. Yet, responses from 20 percent of Group I respondents, 20 percent of Group II, 33 percent of Group III and 16 percent of Group IV indicate that affiliates do report privately and voluntarily to host governments on major funds movements and other activities of strategic importance to the host country economy.

Extent of Involvement. It seems that affiliates of the large multinational firms are inclined to be active in social involvement. Furthermore, the affiliates which are majority-owned by foreigners are more active than the minority-owned ones. The latter firms generally possess a local identity and thus do not feel the pressure to create an image as do the majority-owned affiliates, which may conduct popular types of social responsibility

activities to counteract arguments that multinationals have only one objective — profit.

No means exist in Latin America, nor in any part of the world, for evaluating the extent of involvement in social responsibility of companies on a comparative basis. From personal interviews with respondents in this project, it was determined that foreign affiliates generally do not wish any sort of "report cards" to be attached to them by either host governments or publics, for fear that a "social responsibility war" would break out among competitors. Furthermore, no evidence could be found of measurement of effort put out in social responsibility in excess of that required by law and custom.

AREAS OF OPPORTUNITY

When a company decides that it will become involved in the realm of social responsibility, it faces the decision as to what type of activities it will carry out. An overriding question is whether to carry out projects that are related to or consistent with its business mission. Champion International of Brazil (paper and cellulose) has sponsored a program of seedling planting by farmers.¹⁶ Certain vegetable processors (Nestle) conduct agricultural training schools.¹⁷ Yet other firms feel that social responsibility projects should be divorced from their immediate profit-making operations.

Another question to be decided is whether the firm is looking for short-term or long-term results. A program that benefits a firm's employees or the community that is its market may bring in more rapid results than a tick eradication project in ranch country carried out by a cosmetic company, for instance. Yet the latter activity may bear the appearance of a higher degree of credibility.

Evidence showed that some affiliates had embarked upon projects that backfired on them, particularly in the area of community service projects. It is difficult to determine just which types of projects will receive favorable reaction in a particular community or society; much depends upon the philosophy of the people in the community. A particular welfare project may be well received in one community, yet in another community it may be viewed as an underhanded means to buy public favor. Furthermore, host governments should be studied to determine which activities are more acceptable to them.

¹³Peter F. Drucker, *Preparing Tomorrow's Business Leaders Today*, (Englewood Cliffs, N.J.: Prentice Hall), p. 17.

¹⁴L. L. Halstead, "Business and the Community," *Mexican-*

American Review, March 1978, p. 7.

¹⁷John L. Paluszek, *Business and Society, 1976-200*, (New York: American Management Association, 1976), p. 24.

⁴*Ibid.*

⁵Lee L. Morgan, "Corporate Citizenship," *International Management and Development Institute*, 1979, p. 6.

⁶Frederick D. S. Choi and Gerbard G. Mueller, *An Introduction to Multinational Accounting* (Englewood Cliffs, N.J.: Prentice-Hall, 1978), pp. 325-329.

"United Nations Center on Transnational Corporations Classifications for Bibliography on Transnational Corporations."

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"The Challenge for International Business," by Harvey Kapwick, Chairman of Arthur Andersen & Co.

⁷Jim Budd, "Social Responsibility and the Bottom Line," *Mexican-American Review*, March 1978, p. 43.

⁸*Ibid.*

⁹L. L. Halstead, Speech at 1978 Spring Conference, University of Louisville, Ky., April 24, 1978.

¹⁰"Corporate Citizenship," *International Management and Development Institute*, (Washington, D.C., 1979), p. 43.

¹¹Joe Harmes, "Who's Doing What?" *Mexican-American Review*, March 1978, p. 21.

¹²*Ibid.*, p. 23.

¹³"Corporate Citizenship," *International Management and Development Institute*, (Washington, D.C., 1979), p. 2.

¹⁴*Ibid.*

¹⁵Joe Harmes, "Who's Doing What?" *Mexican-American Review*, March 1978, p. 17.

¹⁶"Examples of Corporate Community Involvement Abroad," *International Management and Development Institute*, (Washington, D.C., 1975), p. 30.

¹⁷"Corporate Citizenship," *International Management and Development Institute*, (1979), p. 3.

The Arizona Business Scene



Consumer Prices in Arizona: Housing Costs

Housing costs have received considerable publicity in recent years as both home purchase prices and mortgage interest costs have rapidly escalated. This article examines the history of inflation in these housing expenditures, comparing the Arizona experience to that of the United States as a whole. Since a common measure of housing costs is the housing portion of the Consumer Price Index, the controversy concerning whether housing costs should be included in the CPI is also examined in the latter part of this article.

The increase in housing costs in the Phoenix area in the past three years has been quite rapid — greater than that of the overall Metropolitan Phoenix CPI and also greater than the national average for housing costs. Since the origination of the Metropolitan Phoenix CPI in 1969, however, housing costs in Phoenix have increased at approximately the same rate as the overall Phoenix CPI, a rate somewhat less than the average for housing costs across the nation. Thus, Phoenix's rapid inflation in housing costs since 1978 have just offset the relatively slow inflation rate of housing from 1969 to 1977.

A comparison of the Phoenix and national rates of inflation is shown in Table 1. (All CPI items other than housing items will be discussed in a future "Arizona Business Scene.") Housing costs in the CPI are divided into three major groups: shelter (by far the largest group); fuel and other utilities; and household furnishings and operation. Each group is further sub-

TABLE 1

PHOENIX AND NATIONAL RATES OF
INFLATION IN HOUSING IN PERCENT,
MEASURED FROM DECEMBER TO DECEMBER

	1980		1969-1980	
	Phoenix	U.S.	Phoenix	U.S.
ALL ITEMS	13.3	12.4	134.0	128.9
HOUSING	14.4	13.7	136.9	142.5
Shelter	17.5	15.1	151.0	154.3
Residential Rent	4.8	9.1	78.3	85.5
Homeownership	20.5	16.5	164.8	176.4
Home Purchase	10.4	11.4	NA	NA
Property Insurance	.1	13.2	NA	90.7
Property Tax	(8.2)	4.6	NA	70.0
Mortgage				
Interest Cost	40.6	27.6	NA	NA
Maintenance and Repair	13.9	10.6	NA	148.8
Fuel and Other Utilities	5.9	13.6	136.8	175.6
Fuel oil, coal, bottled gas	20.5	19.9	NA	448.0
Gas (piped) and electricity	5.3	15.9	NA	199.5
Telephone	(.3)	4.5	NA	38.1
Water and Sewerage				
maintenance	10.9	8.3	NA	134.5
Household Furnishings				
and Operations	6.6	8.1	91.7	90.8

NA = not available

Source: Bureau of Business and Economic Research, College of Business, Arizona State University. Bureau of Labor Statistics, Department of Labor from various issues of the *CPI Detailed Report*.

divided into more detailed subgroups, such as homeownership, which in turn are subdivided into still more detailed categories, such as home purchase.

Shelter costs consist of both rental costs and homeownership costs. Residential rent has increased less than the overall rate of inflation in most years since 1969, both in Phoenix and across the nation. The inability of landlords to increase rents sufficiently to cover their own cost increases (due to the competitive nature of the consumer's choice between renting and home purchasing) has contributed to a decrease in the rate of construction of new multifamily construction.

In contrast, homeownership costs have inflated at a relatively rapid rate, both in 1980 and in the entire 1969-1980 period. Two items are primarily responsible for this rise in costs: home purchase prices and mortgage interest costs. After a number of years of moderate growth of home purchase prices in Phoenix, the increase in prices was 26.2 percent in 1978 and 25.9 percent in 1979. Combined with a more moderate increase of 10.4 percent in 1980, house prices have increased 75 percent in Phoenix in the last three years. Despite a national increase of only 43.5 percent during this time, Phoenix house price inflation still compares favorably to the national average since 1969. This surge in home purchase prices is small in comparison to the increase in mortgage interest costs, however. In the last three years this interest expense soared 188 percent in Phoenix and 115 percent nationwide.

Other homeownership costs have not been a part of the rapid inflation of recent years. In Phoenix, both property insurance and property taxes have decreased over the last two years, by -.3 percent and -9.9 percent, respectively. These decreases compare to national increases of 26.7 percent for property insurance and 8.5 percent for property taxes.

Fuel and other utility costs represent the next largest group of housing costs. These costs have also increased at a slower rate in Phoenix than in the United States as a whole since 1969. After several years of relatively large price rises in the early and middle 1970s, the yearly increases in fuel and other utilities in Phoenix have been only 2.5, 4.4, and 5.9 percent in the last three years. While the cost of electricity and piped gas has increased more rapidly than this in recent years (30.7 percent in the last two years), the largest contributor to inflation in this housing group has been the cost of fuel oil, coal, and bottled gas; this subgroup's average 1980 price across the nation is four and one-half times the 1969 price. In contrast, the cost of telephone service in 1980 is only about one and one-third times the 1969 price.

The third housing cost group is household furnishings and operation. Increases in this category have been moderate, both in recent years and over the entire period since 1969, and have been comparable in Phoenix and the rest of the nation.

Thus, most housing costs in Phoenix have increased at less than or equal to the overall rate of inflation, both in 1980 and since 1969. These price increases have generally been less than the increases in the nation as a whole. The only exceptions have been mortgage interest cost increases from 1978 to 1980 and home purchase price rises in 1978 and 1979. These items increased at far above the overall inflation rate, and also above the average rate for the nation for these items, in these years.

There has been considerable comment across the country in recent years that housing costs should not be included in the CPI, that the rapid increases in these costs are causing the CPI to overstate inflation. There are two primary justifications for this argument: first, homeownership is an investment, not simply an expense; and second, people do not constantly buy houses, thus are not subject to the current inflation. A close examination of these arguments indicates that they are concerned with only two housing costs: home purchase price and mortgage interest cost. Consumers are still subject to increases in all the other housing costs, though all of these other items combined are weighted much less heavily in the CPI than the purchase price and mortgage costs. Further, while most consumers are not affected continuously by these cost increases, the cumulative effect of many months or years of price increases may affect these consumers whenever they do buy a house. Thus, a distinction can and should be made between a long-term and short-term rate of inflation.

The inflation in home purchase prices and mortgage interest costs that is actually felt by a consumer varies greatly depending upon the individual situation of the consumer. There are essentially four situations: (1) *the potential homebuyer*, a consumer who does not now own a home but plans to buy one in the future; (2) *the transient homeowner*, a consumer who currently owns a home and later plans to sell this house and buy another; (3) *the permanent homeowner*, a homeowner who never plans to buy another home; (4) *the permanent renter*, a renter who never plans to buy a home.

In the first situation (the potential homebuyer), until the renter buys a house, the most accurate measure of this consumer's inflation would be to omit homeowner-ship expenses. However, since this renter plans to buy a

house, he will at some time feel the effects of housing inflation; his most accurate long-term inflation measure includes homeownership but excludes rent, since he will not be renting indefinitely. Approximately 15 to 20 percent of Metropolitan Phoenix residents are potential homebuyers.

In the second situation, the consumer is probably not affected by inflation in home purchase prices nor rental increases, but the increase in mortgage interest costs will have an impact. Disregarding income taxes, the current homeowner, on the average, probably has a zero inflation rate in home purchase prices: The current mortgage payment does not increase in the short term and in the long term the increased cost of a newly purchased home will likely be offset by the capital gain realized upon the sale of the current home. The current homeowner is also not affected in the short term by increases in mortgage interest costs, since most consumers have fixed rate mortgages.

However, in the long term the inflation in mortgage interest costs will affect the current homeowner. For example, assume that a person has lived in the same home since 1967, which was financed for \$45,000 at 6 percent interest. The principal and interest payment has not changed for fourteen years. The person must now move, however, and buy a new home at 14 percent interest. Assuming that all of the equity built up in the old home is used as a down payment for the new home and assuming that the amount of money borrowed on the new home is the same \$45,000, the monthly prin-

cipal and interest payment will approximately double from \$270 to \$533 due entirely to the inflation in interest costs. Approximately 35 to 40 percent of Phoenix residents are transient homeowners.

The consumers in the third situation are not affected by inflation in home purchase price and mortgage interest costs, nor in rental expense. These consumers are affected by price changes in other homeownership expenses, such as property taxes. Ironically, most retirees are among this group of consumers, which constitutes about 40 percent of the Phoenix area population, yet social security benefits are increased at the full rate of inflation, including the inflation in home purchase and mortgage interest costs.

For the permanent renter, the increase in rent should be included in the CPI, but all homeownership costs should be omitted. To exclude the inflation in homeownership costs from the CPI, as proposed and practiced by many, is valid only for this small segment of the population, about 5 percent of the Metropolitan Phoenix population.

Thus, the consumers in each situation have differing inflation rates, as illustrated in Table 2. The most accurate measure of inflation for potential homebuyers is the All Items CPI except rent, which measures an inflation rate quite close to the CPI All Items. Consumers in the second situation (transient homeowners) are subject to only a slightly lower inflation rate — that of All Items less home purchase and rent. Like potential homeowners, the full inflation may not be felt mon-

TABLE 2
EFFECTIVE INFLATION RATE FOR VARIOUS CONSUMER SITUATIONS

	<i>CPI All Items</i>	<i>CPI Less Rent</i>	<i>CPI Less Home Purchase and Rent</i>	<i>CPI Less Home Purchase, Mortgage Interest and Rent</i>	<i>CPI Less Homeownership</i>
Metropolitan Phoenix					
1977.....	8.6	8.6	9.0	8.5	8.8
1979.....	11.5	11.8	9.7	5.6	7.0
1979.....	15.8	15.9	14.5	10.6	10.8
1980.....	13.3	13.9	14.4	11.0	10.7
United States Average					
1978.....	9.0	9.1	8.8	7.3	7.8
1979.....	13.3	13.6	13.3	10.5	11.0
1980.....	12.4	12.6	12.7	11.0	11.0

Source: Computed from the Metropolitan Phoenix Consumer Price Index, Bureau of Business and Economic Research, College of Business Administration, Arizona State University; and the National Consumer Price Index, Bureau of Labor Statistics.

thly, but will affect these consumers when they buy another home. The permanent renters and permanent homeowners in the third and fourth situations are subject to considerably slower inflation rates, each excluding both home purchase and mortgage interest costs.

As can be seen from Table 2, the rapid increases in home purchase prices and mortgage interest costs did not occur until 1978. Since that time, the increases in these costs have been more rapid in Phoenix than the national average, to the extent that the inflation rate felt by both the third and fourth groups of consumers (permanent renters and permanent homeowners) has actually been less in Phoenix than nationally. The inflation rate felt by the second set of consumers (transient homeowners) in Phoenix was actually greater than the overall inflation rate in both 1977 and 1980, because home purchase prices increased less than overall inflation in those years.

An alternative to the CPI as a measure of inflation is the Gross National Product Implicit Price Deflator (or GNP deflator). There are numerous differences in methodology between this price index and the CPI, one of which is the method of measuring housing inflation.

Until 1978 there was virtually no difference between the inflation rates measured by these two indexes. In the last three years, however, the inflation measured by the GNP deflator has been less than that measured by the CPI, though only slightly less than the overall CPI excluding home purchase and mortgage interest costs. The GNP deflator probably underestimates substantially the long-term inflation felt by both the potential homebuyers and transient homeowners, thus its use is not recommended for these consumers, except as a short-term estimate.

The CPI probably has overstated the inflation rate for the average of all American consumers in the past three years, though by only a relatively small amount. For example, in Phoenix, the inflation rate for the average of the four sets of consumers has ranged from approximately one-half to three percentage points less than that measured by the Phoenix CPI in the past three years. To correct this situation, the Department of Labor, which generates the national CPI, and upon whose specifications the Metropolitan Phoenix CPI is generated, has announced that it plans to revise the method of computing homeownership costs, effective with its next major revision, probably in 1985.

A Survey of Arizona Business Conditions

HAROLD FEARON

The Arizona economy showed signs of an early revival in March, according to results from the monthly business survey of the Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona. Following the lackluster performance in February, both the new orders received and production indicators registered nice increases. Even the price indicator showed signs of continued moderation. The only negative sign was a slight drop in employment, but that is likely only a temporary condition.

The purchasing business survey is in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Prices paid for major purchased items went up again in March, but the increase rate is moderating. The March increase was the lowest since last August and

substantially under the increase rates of almost every month of 1978 through 1980. Fifty percent of the purchasing managers reported they paid higher prices in March than in February; 46 percent saw prices unchanged; and 4 percent said prices declined. While there is still a long way to go before the economy reaches anything close to an acceptable inflation rate, the signs are encouraging and it is likely that the overall rate of price hikes during 1981 will be the lowest in several years.

Delivery time on shipments from vendors continued to stretch out, and at a rate slightly greater than in February but still under that of the final quarter of 1980. Longer delivery times were reported by 25 percent of the firms, while 13 percent got faster service from their suppliers. The pressure on vendor deliveries has lessened somewhat, due to the slower overall economic growth in the first quarter, and vendors now are able to respond to buyers' needs with reasonable promptness.

Inventory levels of purchased materials declined again in March, and at the same rate as in February. However, neither month saw any major drop. Inventory has fallen in ten out of the past twelve months, and March saw 33 percent of the firms cutting stocks, compared to 26 percent who increased inventory. The inventory levels, relative to orders and production, appear to be in good shape.

New orders received from customers registered a nice increase, the third consecutive one, and the highest jump since last September. Thirty-six percent said their

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order books grew in March, compared to only 23 percent who booked less business in March than in February. Thus, Arizona firms are seeing a nice recovery in the rate at which incoming business is being received, and this will continue to stimulate the economy as we move into the second quarter.

Production jumped substantially in March, following February's zero growth. Higher output was reported by 37 percent of the firms, which was over twice the 17 percent who cut output. The March increase was the highest in over a year (since October of 1979), and as new orders follow an upward trend, additional output will be needed to meet customer demand.

Employment decreased in March, following three months of essentially no growth. This was the only negative sign reported in the March survey, but the 23 percent who pared payrolls was not that much larger than the 18 percent who reported an increase in their work force. Actually, employment has held up well over the past year of slow economic growth, and the March decline probably is only a temporary phenomenon, which should be reversed over the next few months.

Thus, Arizona's business growth appears to have

snapped back as we reach the end of the first quarter. While the economy's performance in March was less than spectacular, it is following an upward trend and conditions appear right for a continuation and strengthening of this trend in the second quarter.

The results of the March purchasing survey are shown in Table 1.

TABLE 1

MARCH PURCHASING SURVEY

Key Indicators	Percent of Purchasing Managers Indicating Each Response (March compared to February)		
	Higher	Same	Lower
Prices paid for major commodities	50	46	4
Delivery time from vendors	25	62	13
Purchased materials inventory level	26	41	33
New orders received	36	41	23
Production	37	46	17
Employment	18	59	23

Source: Survey of the Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona.

ARIZONA SALES OF ELECTRICAL POWER

By Month in Millions of KWH*

Current Month:	Actual:		Percent Change Current Month From:	
	1981	1980	Same Month/ Previous Year	Previous Month
February	2157.6	2016.5	+ 7.0	-8.1

* Based on reports from major suppliers.

Maricopa County

Retail Food Prices

MARCH, 1981

Retail food prices in Maricopa County rose 0.5 percent in March, following a 0.7 percent increase in February. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank.

The March index of 261.7 indicates that shoppers would now have to pay \$26.17 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$23.38 one year ago. The March, 1981, index reflects an 11.9 percent increase over the March, 1980, value.

The moderate gain in the March index value was due to increases in all but one of the subgroups. Both *Meats, Poultry, Fish, and Eggs* and *Other Foods* rose 0.7 percent, followed by *Fruits and Vegetables* (0.2 percent) and *Dairy Products* (0.1 percent). A slight decline of -0.1 percent was noted for *Cereals and Bakery Products*.

The higher index value for *Meats, Poultry, Fish, and Eggs* was primarily due to higher prices for chicken and pork. Fresh or frozen chicken parts rose 19.4 percent, followed by fresh whole chicken (15.1 percent). Also increasing were most pork items, notably pork chops (5.3 percent), sausage (4.2 percent), and canned ham (3.4 percent). These gains were partially offset by price reductions for lamb and organ meats (-5.8 percent), eggs (-4.2 percent), and chuck roast (-2.3 percent).

Increases in several categories contributed to the boost in the *Other Foods* subgroup. Accelerating prices for peanut butter were responsible for a 12.2 percent hike in the category of nondairy substitutes, imitation milk, and peanut butter. Also rising were prices for

margarine (5.5 percent) and candy/chewing gum (2.8 percent). The most notable decline in this subgroup was roasted coffee, down 2.4 percent.

Contributing to the increase in *Fruits and Vegetables* were higher prices for lettuce (up 11.1 percent) and bananas (5.7 percent). Escalating prices for frozen orange juice pushed the category of frozen fruit and fruit juices up 4.6 percent. After three months of soaring prices, tomatoes fell 10.6 percent this month, partially holding down advances in the total subgroup. Declining prices were also noted for apples (-7.6 percent), miscellaneous fresh vegetables (-4.6 percent), and oranges (-3.4 percent).

There were only slight movements in prices in the *Dairy Products* and *Cereals and Bakery Products* subgroups during March. The gain of 5.7 percent for the category of dairy products other than butter, cheese, and ice cream was due primarily to increases in yogurt prices. Partially counteracting that advance was a 2.3 percent drop for fresh milk (other than whole milk) and cream. In the *Cereals and Bakery Products* subgroup, prices fell for bread other than white (-3.2 percent) and cookies (-0.5 percent), while the category of rice, macaroni, and cornmeal rose 2.6 percent.

A comparison of December, 1980, Food Consumed at Home index for Maricopa County with index values for four selected metropolitan areas (Table 1) reveals that the outlays required to purchase a foodstuffs group in December, 1980 (obtainable for an outlay of \$10.00 at 1967 average prices) were \$25.56 in Maricopa County; \$26.15 in Los Angeles-Long Beach; \$26.80 in San Francisco-Oakland; \$26.56 in Chicago-Northwestern Indiana; and averaged \$26.39 in the United States.

TABLE 1

INDEX FOR FOOD CONSUMED AT HOME
 Maricopa County, United States, and Selected Metropolitan Areas
 (Average 1967 = 100 percent)

Group	Maricopa County Mar. '81 ^a	Maricopa County Dec. '80 ^b	United States Dec. '80	Los Angeles Long Beach Dec. '80	San Francisco Oakland Dec. '80	Chicago ^c North western Indiana Dec. '80
Food Consumed at Home	261.7	255.6	263.9	261.5	268.0	265.6
Cereals and Bakery Products	248.4	237.7	258.5	262.6	263.4	264.9
Meats, Poultry, Fish, and Eggs	262.9	264.6	255.7	254.1	262.4	264.1
Dairy Products	229.2	225.5	238.0	230.8	232.8	229.7
Fruits and Vegetables	249.5	236.9	255.6	250.7	264.8	257.7
Other Foods Consumed at Home	293.5	283.6	317.1	311.4	325.5	318.6

^aComputed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

^bMaricopa County food prices are reported for the month closest to publication.

^cComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index Comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

FEBRUARY, 1981

Arizona Building Permits: Monthly Report

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE CO.	12	113,000	3	—	1	75,000	1	9,000	17	197,000
Eagar	2	57,500	—	—	1	75,000	—	—	3	132,500
St. Johns	2	N/C	—	—	—	—	—	—	2	N/C
Springville	4	N/C	3	—	—	—	—	—	7	N/C
Unincorporated	4	55,500	—	—	—	—	—	—	5	64,500
COCHISE CO.	62	971,957	8	1,819,812	2	25,200	88	220,523	160	3,037,492
Benson	2	76,500	1	250,000	1	24,000	5	38,200	9	388,700
Bisbee	5	7,000	—	—	—	—	—	—	5	7,000
Douglas	4	45,219	—	—	—	—	—	—	26	100,029
Huachuca City	1	3,000	—	—	—	—	—	—	1	3,060
Sierra Vista	17	283,903	2	1,538,512	—	—	53	104,973	72	1,927,388
Tombstone	—	—	—	—	—	—	—	—	1	500
Unincorporated	27	520,835	5	31,300	1	1,200	6	20,040	39	573,375
Willcox	6	35,500	—	—	—	—	—	—	7	37,500
COCONINO CO.	97	2,392,860	16	670,628	2	66,500	22	194,210	137	3,324,198
Flagstaff	20	844,817	9	411,798	2	66,500	13	27,935	44	1,351,050
Fredonia	4	62,000	—	—	—	—	—	—	4	62,000
Page	31	500,940	3	14,300	—	—	1	160,500	35	675,740
Unincorporated	41	971,103	4	244,530	—	—	5	3,500	50	1,219,133
Williams	1	14,000	—	—	—	—	3	2,275	4	16,275
GILA CO.	52	637,556	1	—	—	—	31	197,540	84	835,096
Globe	8	19,200	—	—	—	—	6	13,900	14	33,100
Hayden	—	—	—	—	—	—	—	—	—	—
Miami	3	15,500	—	—	—	—	—	—	3	15,500
Payson	14	83,336	1	—	—	—	—	—	34	86,676
Unincorporated	27	519,520	5	91,800	—	—	19	3,340	33	699,820
GRAHAM CO.	33	302,859	—	—	—	—	6	180,300	39	395,159
Pima	2	3,500	—	—	—	—	1	500	2	3,500
Safford	9	137,938	4	86,800	—	—	1	500	14	225,238
Thatcher	5	6,980	—	—	—	—	—	—	5	6,980
Unincorporated	17	154,441	1	5,000	—	—	—	—	18	159,441
GREENLEE CO.	2	65,385	1	1,000	—	—	—	—	3	66,385
Clifton	—	—	—	—	—	—	—	—	—	—
Duncan	—	—	—	—	—	—	—	—	—	—
Unincorporated	2	65,385	1	1,000	—	—	—	—	3	66,385
MARICOPA CO.	2,133	59,902,993	98	24,703,978	33	10,581,638	1,624	18,906,863	3,888	114,095,472
Avondale	—	—	—	—	—	—	10	11,440	10	11,440
Buckeye	3	52,074	1	125,000	—	—	2	3,000	6	180,074
Chandler	114	2,767,116	—	—	2	590,000	155	699,908	271	4,057,024
El Mirage	2	36,436	—	—	—	—	4	23,900	6	60,336
Gila Bend	—	—	—	—	—	—	1	500	1	500
Gilbert	21	517,280	2	125,880	—	—	25	27,393	48	670,553
Glendale	133	3,062,020	3	247,200	—	—	161	2,523,600	297	5,832,820
Goodyear	—	—	1	279,930	—	—	9	483,154	10	763,084
Guadalupe	4	14,780	—	—	—	—	1	2,592	5	17,372
Mesa	180	6,192,344	16	2,700,812	4	1,109,866	258	4,804,826	458	14,807,848
Paradise Valley	15	235,602	—	—	—	—	—	—	15	233,602
Peoria	37	867,238	3	713,000	—	—	60	80,636	100	1,660,874
Phoenix	736	23,384,062	43	16,114,995	16	6,215,072	570	5,654,228	1,365	51,368,257
Scottsdale	104	4,720,587	11	1,612,961	—	—	147	1,066,676	262	7,400,224
Surprise	9	58,100	—	—	—	—	1	200	10	58,300
Tempe	111	4,129,800	4	150,100	10	666,700	35	289,200	160	5,235,800
Tolleson	8	26,595	1	13,000	—	—	1	500	10	40,095
Unincorporated	627	13,754,495	12	2,578,000	1	2,000,000	181	3,209,740	821	21,542,255
Wickenburg	4	65,500	1	43,200	—	—	1	25,000	6	133,700
Youngtown	25	20,964	—	—	—	—	2	370	27	21,334

Arizona Building Permits: Monthly Report (Continued)

FEBRUARY, 1981

	RESIDENTIAL			COMMERCIAL			INDUSTRIAL			OTHER			TOTAL		
	Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value		Number of Permits	Dollar Value	
MOHAVE CO.	255	3,574,852		17	1,245,579		—	—		247	2,563,485		518	7,383,916	
Kingman City	25	375,814		2	537,000		—	—		9	15,412		36	928,226	
Kingman Area	52	565,523		—	—		—	—		43	46,256		95	611,779	
Lake Havasu City	46	1,234,032		2	243,419		—	—		37	2,130,653		85	3,608,104	
Lake Havasu Area	6	34,240		1	17,280		—	—		16	30,166		23	81,686	
Mohave Valley N.	65	710,921		9	392,812		—	—		80	236,872		154	1,340,605	
Mohave Valley S.	37	361,731		1	11,232		—	—		42	86,146		80	459,109	
Dolan Springs	10	101,312		2	43,836		—	—		9	9,370		21	154,518	
Sacramento Valley	7	86,283		—	—		—	—		7	2,834		14	89,117	
Mohave Co. General	7	104,996		—	—		—	—		4	5,776		11	110,772	
NAVAJO CO.	66	1,093,974		3	121,545		—	59,532		3	11,920		74	1,288,971	
Holbrook	2	9,500		—	—		—	—		1	10,000		3	19,500	
Show Low	6	46,500		—	—		—	—		—	—		8	106,032	
Snowflake	4	N/C		—	—		—	—		—	—		4	N/C	
Taylor	4	50,000		1	60,000		—	—		—	—		5	110,000	
Unincorporated	37	699,474		2	61,545		—	—		1	1,120		40	762,139	
Winslow	13	290,500		—	—		—	—		—	800		14	291,300	
PIMA CO.	764	16,884,161		40	29,029,071		2	102,139		408	2,162,270		1,214	48,177,641	
Marana	3	N/C		—	—		—	—		1	N/C		4	N/C	
Oro Valley	—	—		—	—		—	—		—	—		—	—	
South Tucson	9	5,800		1	10,752		2	102,139		4	6,800		16	125,491	
Tucson	313	6,026,161		23	2,746,519		—	—		203	1,164,545		539	9,937,225	
Unincorporated	439	10,852,200		16	26,271,800		—	—		200	990,925		655	38,114,925	
PINAL CO.	251	2,075,871		3	107,320		—	—		75	291,305		329	2,474,406	
Apache Jct.	33	508,522		2	52,320		—	—		28	28,536		63	389,378	
Casa Grande	9	458,368		—	—		—	—		11	98,179		20	556,547	
Coolidge	16	50,864		—	—		—	—		6	15,400		22	66,264	
Eloy	1	1,000		—	—		—	—		5	2,450		6	3,450	
Florence	1	1,000		—	—		—	—		4	9,670		5	10,670	
Kearny	3	36,900		—	—		—	—		—	—		3	36,900	
Mammoth	—	—		—	—		—	—		—	—		—	—	
Superior	2	N/C		—	—		—	—		2	N/C		4	N/C	
Unincorporated	186	1,019,217		1	55,000		—	—		19	137,070		206	1,211,287	
SANTA CRUZ CO.	23	540,755		4	280,600		1	5,000		13	90,547		41	916,902	
Nogales	11	39,175		—	—		—	—		10	66,535		21	105,710	
Patagonia	3	55,000		3	60,600		1	5,000		1	50		8	120,650	
Unincorporated	9	446,580		1	220,000		—	—		2	23,962		12	690,542	
YAVAPAI CO.	187	6,189,709		5	129,060		1	9,000		76	207,637		269	6,535,406	
Chino Valley	12	450,315		—	—		—	—		1	500		13	430,815	
Clarkdale	5	119,560		—	—		—	—		1	400		6	119,960	
Cottonwood	20	264,292		—	—		—	—		6	8,650		26	272,942	
Jerome	—	—		2	4,700		—	—		1	2,300		3	7,000	
Prescott	33	1,042,196		1	85,860		—	—		30	91,384		64	1,219,440	
Prescott Valley	16	311,564		—	—		—	—		—	—		16	311,564	
Unincorporated	101	4,021,782		2	38,500		1	9,000		37	104,403		141	4,173,685	
YUMA CO.	221	5,886,735		15	1,281,829		1	96,930		34	414,116		271	7,679,610	
Parker	—	—		—	—		—	—		3	147,000		3	147,000	
Somerton	11	550,800		—	—		—	—		2	1,700		13	552,500	
Unincorporated	164	4,346,333		8	427,080		—	—		14	158,020		186	4,931,430	
Wellton	—	—		—	—		—	—		—	—		—	—	
Yuma	46	989,605		7	854,749		1	96,930		15	107,396		69	2,048,680	
Total Maricopa Co., February, 1981	2,133	59,902,993		98	24,703,978		33	10,581,638		1,624	18,906,863		3,888	114,095,472	
Total Maricopa Co., February, 1980	1,988	37,619,461		116	35,388,583		44	21,019,450		1,650	18,353,980		3,798	112,581,474	
Percent Change	7	59		-15	-30		-25	-49		-1	3		2	1	
Total Arizona, February, 1981	4,158	100,634,667		219	59,482,222		45	11,020,939		2,623	25,269,916		7,045	196,407,744	
Total Arizona, February, 1980	4,150	68,705,131		242	54,602,404		45	21,033,011		2,408	24,297,188		6,845	168,637,734	
Percent Change	—	46		-9	-8		—	-47		8	4		2	16	

*Includes mobile homes. N/C: Not collected.

Arizona New Housing Starts: Monthly Report

FEBRUARY, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
APACHE CO.	10	1	—	—	1	35
Eagar	2	—	—	—	—	2
St. Johns	—	1	—	—	—	1
Springerville	4	—	—	—	1	28
Unincorporated	4	—	—	—	—	4
COCHISE CO.	16	17	—	—	1	133
Benson	—	—	—	—	—	—
Bisbee	—	—	—	—	—	—
Douglas	1	—	—	—	—	1
Huachuca City	—	—	—	—	—	—
Sierra Vista	5	2	—	—	1	107
Tombstone	—	—	—	—	—	—
Unincorporated	9	13	—	—	—	22
Willcox	1	2	—	—	—	3
COCONINO CO.	44	23	—	3	—	79
Flagstaff	14	—	—	3	—	26
Fredonia	1	2	—	—	—	3
Page	6	12	—	—	—	18
Unincorporated	23	8	—	—	—	31
Williams	—	1	—	—	—	1
GILA CO.	11	12	—	—	—	23
Globe	—	—	—	—	—	—
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	5	6	—	—	—	11
Unincorporated	6	6	—	—	—	12
GRAHAM CO.	6	9	—	1	—	19
Pima	—	2	—	—	—	2
Safford	3	—	—	1	—	7
Thatcher	—	—	—	—	—	—
Unincorporated	3	7	—	—	—	10
GREENLEE CO.	2	—	—	—	—	2
Clifton	—	—	—	—	—	—
Duncan	—	—	—	—	—	—
Unincorporated	2	—	—	—	—	2
MARICOPA CO.	1,223	170	15	8	16	2,055
Avondale	—	—	—	—	—	—
Buckeye	2	—	—	—	—	2
Chandler	88	—	—	—	—	88
El Mirage	1	1	—	—	—	2
Gila Bend	—	—	—	—	—	—
Gilbert	12	1	—	1	—	17
Glendale	111	—	—	—	—	111
Goodyear	—	—	—	—	—	—
Guadalupe	—	—	—	—	—	—
Mesa	139	—	8	3	5	212
Paradise Valley	—	—	—	—	—	—
Peoria	35	—	—	—	—	35
Phoenix	429	37	2	2	11	1,034
Scottsdale	66	—	—	1	—	69
Surprise	1	4	—	—	—	5
Tempe	65	—	1	1	—	71
Tolleson	—	—	1	—	—	2
Unincorporated	272	127	3	—	—	405
Wickenburg	2	—	—	—	—	2
Youngtown	—	—	—	—	—	—

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
MOHAVE CO.	63	78	—	2	—	147
Kingman City	10	1	—	—	—	11
Kingman Area	4	31	—	—	—	35
Lake Havasu City	29	1	—	—	—	30
Lake Havasu Area	—	2	—	—	—	2
Mohave Valley N.	8	19	—	2	—	33
Mohave Valley S.	5	13	—	—	—	18
Dolan Springs	2	5	—	—	—	7
Sacramento Val.	2	3	—	—	—	5
Mohave General	3	3	—	—	—	6
NAVAJO CO.	25	17	1	—	—	44
Holbrook	—	—	—	—	—	—
Show Low	2	2	—	—	—	4
Snowflake	4	—	—	—	—	4
Taylor	1	3	—	—	—	4
Unincorporated	11	11	1	—	—	24
Winslow	7	1	—	—	—	8
PIMA CO.	298	192	12	8	2	556
Marana	—	2	—	—	—	2
Oro Valley	—	—	—	—	—	—
South Tucson	—	—	—	—	—	—
Tucson	121	45	9	8	2	226
Unincorporated	177	145	3	—	—	328
PINAL CO.	51	151	—	1	—	206
Apache Junc.	10	14	—	—	—	24
Casa Grande	8	—	—	—	—	8
Coolidge	—	2	—	—	—	2
Eloy	—	—	—	—	—	—
Florence	—	—	—	—	—	—
Kearny	1	—	—	—	—	1
Mammoth	—	—	—	—	—	—
Superior	—	—	—	—	—	—
Unincorporated	32	135	—	1	—	171
SANTA CRUZ CO.	10	1	—	1	—	15
Nogales	1	—	—	—	—	1
Patagonia	1	1	—	1	—	6
Unincorporated	8	—	—	—	—	8
YAVAPAI CO.	83	44	—	1	—	131
Chino Valley	4	5	—	—	—	9
Clarkdale	3	—	—	—	—	3
Cottonwood	4	5	—	—	—	9
Jerome	—	—	—	—	—	—
Prescott	17	—	—	1	—	21
Prescott Valley	8	7	—	—	—	15
Unincorporated	47	27	—	—	—	74
YUMA CO.	98	66	—	2	5	201
Parker	—	—	—	—	—	—
Somerton	11	—	—	—	—	11
Unincorporated	67	66	—	—	—	133
Wellton	—	—	—	—	—	—
Yuma	20	—	—	2	5	57
Total, Maricopa Co., February, 1981	1,223	170	15	8	16	2,055
Total, Maricopa Co., February, 1980	906	187	5	9	20	1,513
Percent Change	34	-9	200	-11	-19	35
Total, Arizona, February, 1981	1,940	781	28	27	25	3,646
Total, Arizona, February, 1980	1,626	586	13	31	21	2,817
Percent Change	19	33	115	-13	19	29

*Beginning with the January report, mobile home permits are listed separately instead of being included with single-family permits.

N/R: No report; data for this month will be for the following month.

Metropolitan Phoenix Consumer Price Index

FIRST QUARTER, 1981

Prices of goods and services typically purchased by households in the Phoenix metropolitan area rose 3.1 percent during the first quarter of 1981, comparing favorably with the 3.3 percent rise posted for the fourth quarter of 1980. The rise in consumer prices for the Phoenix area is larger than the increase posted for the United States as a whole (2.7 percent) and higher than the comparison cities of Los Angeles (2.4 percent) and Chicago, which posted a decrease of -0.1 percent.

In comparison with the fourth quarter of 1980, however, the one-year increase of 9.3 percent for Phoenix is less than the increase posted for the nation as a whole (11.3 percent), Chicago (11.6 percent), and Los Angeles (10.1 percent). Although this quarter's percentage change from a year ago is substantially less than the 13.3 percentage increase posted during the one-year period ending with the fourth quarter of 1980, it should not necessarily be interpreted as a sharp decline in Phoenix area inflation. The rate for Phoenix is low this quarter because the year-ago percentage changes include the second quarter of 1980 when prices rose by only 0.1 percent, primarily due to a large drop in mortgage interest rates.

The Consumer Price Index (CPI) for the Phoenix metropolitan area, on which these inflation measures are based, is prepared by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. The quarterly CPI is based on comprehensive surveys conducted by the Bu-

reau of Business and Economic Research in cooperative cosponsorship with Valley National Bank.

In the *Food* category, Food at Home rose 3.0 percent in the first quarter of 1981, slightly less than in the third and fourth quarters of 1980. Large increases in the prices of Fruits and Vegetables (5.3 percent), Cereals and Bakery Products (4.4 percent), and Other Foods (4.0 percent) were tempered by relatively stable prices in Meats, Poultry, Fish, and Eggs (0.2 percent). The Phoenix area Food at Home increase of 3.0 percent for the first quarter compares unfavorably with the United States, Chicago, and Los Angeles averages of 2.0 percent, 2.4 percent, and 2.2 percent, respectively. Since the first quarter of 1980, the increase for Phoenix Food at Home prices of 12.2 percent has been higher than the one-year increases posted for the United States (10.8 percent), Chicago (10.6 percent) and Los Angeles (10.8 percent). Food Away from Home prices in Phoenix increased less in the first quarter (2.4 percent) than in any of the four quarters of 1980. Food Away from Home prices have increased 11.3 percent since one year ago, a rate exceeded by most items in the overall *Food* category.

The price index for *Housing* increased 3.1 percent in the first quarter, down from the 3.8 percent rise posted for the fourth quarter of 1980. Contracted mortgage interest costs and home purchase prices, the two most important items in the Homeownership subcategory, rose by 4.4 percent and 3.1 percent respectively.

Residential rents continued to have another small increase, only 0.6 percent for the first quarter. Fuel and utility costs rose by 4.7 percent, the largest major increase within the overall *Housing* category. Electricity rates led with an 11.6 percent increase over last quarter.

The change in *Housing* from one year ago is 8.6 percent, comparing favorably with the United States average of 12.1 percent, Chicago (13.1 percent), and Los Angeles (11.3 percent). Percentage changes from one year ago within the Phoenix Housing category are as follows: residential rent, 4.1 percent; contracted mortgage interest costs, 13.0 percent; home purchase prices, 9.1 percent; household furnishings and operations, 6.9 percent. Fuel and Other Utilities again led with a rise of 9.8 percent, reflecting increases in energy costs. In comparison however, fuel and utility rates rose less in Phoenix than in the nation as a whole and the two comparison cities.

Apparel and Upkeep rose at a quarterly rate of 2.0 percent. Although low in comparison to other major CPI categories and only slightly above past quarters, this increase in Apparel Commodities is the largest since the third quarter of 1979. Rising prices in Men's, Women's and Girls' Apparel were only partially offset by a decline in Boys' Clothing and stable prices for apparel accessories and services. The 4.6 percentage change from one year ago compares favorably with the United States average of 5.9 percent but is higher than the rates for Los Angeles (1.3 percent) and Chicago, which posted a decline of -0.1 percent.

Transportation costs in the Phoenix area increased by 5.4 percent in the first quarter of 1981, up from the rates posted for the previous three quarters of 1980. Transportation costs rose faster in the first quarter than in any of the other seven major CPI categories. Private Transportation in Phoenix increased 5.5 percent over the last quarter, due largely to an 8.7 percent increase in used car prices and a 9.7 percent increase in gasoline costs. Other private transportation costs remained relatively constant from last quarter, including new car and insurance prices. However, in comparison to one year ago, sharp rises in both new car prices (15.0 percent)

and vehicle maintenance and repair costs (14.9 percent), pushed the one-year increase for Private Transportation to 8.5 percent. Although now rising rapidly, as of this quarterly report, used car prices had increased only 0.7 percent since the first quarter of 1980.

Public Transportation rose by 3.6 percent during the first quarter, down considerably from the 11.0 percent rise posted for the fourth quarter of 1980. Increases in airline fares (5.5 percent) were offset by stable fares for train, bus and taxi services. Since one year ago, however, public transportation costs have jumped 30.4 percent. This increase has been caused almost entirely by sharp escalations in airline fares (36.1 percent). The *Transportation* category as a whole has increased 9.7 percent from one year ago. Phoenix area transportation costs during the twelve-month period compare favorably with the figures for the nation as a whole (13.1 percent) and Chicago (14.0 percent) and are only slightly above the rate posted for Los Angeles (9.4 percent).

Medical Care in the Phoenix area rose by 1.5 percent in the first quarter, a more moderate rise than the 3.8 and 2.2 percentage increases of the third and fourth quarters of 1980. Prices for hospital and related services rose 7.3 percent, while prices for professional services, drugs, and medical insurance remained relatively constant. The 9.2 percent change from one year ago compares favorably with the rate for the United States as a whole (9.6 percent) and the 9.4 percentage increases posted for both Chicago and Los Angeles.

Entertainment costs rose by only 1.6 percent in the first quarter, compared to a 7.0 percent jump for the fourth quarter of 1980. Entertainment costs in the Phoenix area have increased 12.8 percent since one year ago. Comparable figures for the nation as a whole, Chicago, and Los Angeles are 9.6 percent, 9.2 percent and 9.8 percent respectively.

The costs of *Other Goods and Services* declined by -1.4 percent during the first quarter of 1981. This decline for *Other Goods and Services*, the largest decrease since 1975, was due to lower prices for various tobacco related products and personal care accessories and services.

Note: The complete Metropolitan Phoenix Consumer Price Index and the percentage changes for the United States and comparative cities are found on the following page.

METROPOLITAN PHOENIX CONSUMER PRICE INDEX
FIRST QUARTER 1981
(1969 = 100)

Group	Fourth Quarter 1980 Index	First Quarter 1981 Index	Percentage Change from Last Quarter	Percentage Change from One Year Ago
All Items	234.0	241.2	3.1	9.3
Food and Beverages	219.9	225.9	2.7	11.6
Food	225.0	231.3	2.8	11.9
Food at Home	235.7	242.8	3.0	12.2
Cereal and Bakery Products	227.4	237.3	4.4	11.9
Meats, Poultry, Fish, and Eggs	233.5	234.0	0.2	7.2
Dairy Products	210.2	217.2	3.3	11.2
Fruits and Vegetables	231.1	243.3	5.3	20.4
Other Food at Home	259.7	270.1	4.0	13.6
Food Away from Home	203.4	208.3	2.4	11.3
Alcoholic Beverages	154.1	156.5	1.6	8.5
Housing	236.9	244.2	3.1	8.6
Shelter	251.0	258.0	2.8	8.6
Rent, Residential	178.3	179.3	0.6	4.1
Homeownership	264.8	273.7	3.4	9.7
Fuel and Other Utilities	236.8	247.9	4.7	9.8
Household Furnishings and Operations	191.7	197.8	3.2	6.9
Apparel and Upkeep	174.5	177.9	2.0	4.6
Apparel Commodities	164.1	168.1	2.5	2.4
Men's and Boys' Apparel	150.6	153.1	1.6	2.0
Women's and Girls' Apparel	159.4	164.9	3.5	3.9
Footwear	201.4	204.9	1.7	-2.0
Transportation	248.4	261.7	5.4	9.7
Private Transportation	245.4	258.9	5.5	8.5
Public Transportation	299.6	310.4	3.6	30.4
Medical Care	317.3	322.2	1.5	9.2
Entertainment	202.2	205.5	1.6	12.8
Other Goods and Services	226.2	223.1	-1.4	6.3
Personal Care	222.2	220.3	-0.9	5.2

Note: Cosponsor of the Metropolitan Phoenix Consumer Price Index is Valley National Bank. This credit was inadvertently omitted from the CPI tables in the March issue of *Arizona Business*.

UNITED STATES AND COMPARATIVE CITIES

Group	United States		Chicago		Los Angeles	
	Percentage Change From Last Quarter	Percentage Change From One Year Ago	Percentage Change From Last Quarter	Percentage Change From One Year Ago	Percentage Change From Last Quarter	Percentage Change From One Year Ago
ALL ITEMS	2.7	11.3	-0.1	11.6	2.4	10.1
Food	2.4	10.6	2.0	10.1	2.9	10.9
Food at Home	2.0	10.8	2.4	10.6	2.2	10.8
Food Away From Home	3.4	10.2	1.2	9.1	4.1	10.9
Housing	2.6	12.1	-3.4	13.1	2.3	11.3
Shelter	2.0	12.5	-6.3	15.2	2.5	11.8
Fuel & Utilities	6.6	15.4	7.7	10.3	0.5	11.2
Household Furnishings & Operations	1.8	8.0	1.5	6.8	2.2	8.9
Apparel and Upkeep	-1.5	5.9	-5.4	-0.1	-1.7	1.3
Transportation	4.6	13.1	4.9	14.0	3.4	9.4
Medical Care	3.0	9.6	3.7	9.4	2.4	9.4
Entertainment	2.6	9.6	3.6	9.2	2.9	9.8
Other Goods and Services	2.1	9.3	1.8	10.2	1.7	7.2

Source: Metropolitan Phoenix data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University in cosponsorship with Valley National Bank; other data from U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.



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Report To The Reader

"Little is known about the cost-effectiveness of personnel administration or its contribution to organizational productivity," says Dr. Harold C. White, Professor of Management in the College of Business Administration, Arizona State University. He partially fills that void in this issue of *Arizona Business* with his report on a study of the effectiveness of personnel activities in three local companies.

According to Dr. White, "Most firms make little attempt to maximize the potential for personnel administration to motivate employees for maximum productivity It is not surprising, therefore, to find that most employees are little aware of the benefits available to them nor that they undervalue the costs and usefulness of the benefits of which they are aware."

The study showed in general, that when employees believed strongly that the employer provided a particular personnel activity, they also felt that the activity increased their job satisfaction and increased their job performance. Communication is an important element in the personnel process. "Employees should be informed completely and continuously about the personnel program," says Dr. White.

Furthermore, Dr. White says, "Management needs to recognize that the characteristics of the employees themselves can affect their perceptions of and reactions to the personnel program." What is a maintaining factor for a company with highly skilled employees may be a motivating factor for a company with relatively less-skilled people.

"Studies of this nature in every organization as a beginning effort, combined with increasing attention to the relationships between personnel administration and organizational effectiveness, can increase the likelihood that personnel administration is not just another major cost of the organization, but is truly an investment in organizational productivity," Dr. White concludes.



Personnel Administration: Investment or Overhead?

HAROLD C. WHITE

Are business firms getting their money's worth in wages, benefits, and other personnel administration activities? Consider these facts: Companies average \$5,560 per employee for benefits, 36.6 percent of total payroll costs.¹ Average weekly earnings increased 85 percent, while average benefits increased 165 percent in a recent ten-year period.²

Personnel administration includes activities that relate to obtaining, retaining, and developing employees. With the continued inflationary pressures, plus job skill shortages, labor union demands, government legislation, foreign competition, and increasing awareness of the concepts of employee motivation, personnel administration is growing in importance. Personnel directors are receiving increased authority and status³ as well as increased budgets and staffs.⁴ Top management in all major industries is showing strong support for greater personnel department involvement in most personnel activities.⁵

Three organizations — a bank, a utility, and a specialty manufacturer — were surveyed to identify the contributions of personnel administration for employee satisfaction and employee productivity. The study indicates that employees do indeed believe that the personnel administration program has a positive influence on their job performance and satisfaction.

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Categories have been identified for measuring personnel administration (Table 1).⁶ Nevertheless, little is actually known about the cost-effectiveness of personnel administration or its contribution to organizational

TABLE 1
CATEGORIES FOR MEASURING PERSONNEL
ADMINISTRATION

Performance measures

- Overall personnel performance; for example, the unit labor costs per unit of output
- Personnel department costs and performance; the cost per employee of personnel programs

Employee satisfaction measures

- Employee satisfaction with their jobs
- Employee satisfaction with personnel activities such as training, pay, benefits, and career development

Direct measures of personnel performance

- Employee turnover: the rate of resignations as a percentage of labor force and by units over time
- Absenteeism: the rate of voluntary absences of the labor force and by units over time
- Scrap rates
- Other measures of quality
- Rates of employee requests for transfer
- Number of grievances per unit and in total labor force over time
- Safety and accident rates
- Number of improvement suggestions per employee over time

Source: W. Rabe, "Yardsticks for Measuring Personnel Department Effectiveness," *Personnel*, 44 (January/February 1967): 56-62.

productivity. A quarter of a century ago, Peter Drucker observed, "The constant worry of all personnel administrators is their inability to prove that they are making a contribution to the enterprise."⁷ A review of the literature covering a forty-year period revealed only one article that provided cost figures for personnel administration and no more than a half dozen articles with data that attempted to demonstrate that any personnel administration activity was cost effective.

OBSTACLES TO PERSONNEL ADMINISTRATION MEASUREMENT

Of the five million employing organizations in the United States, it is estimated that not more than 150 are conducting any personnel administration research.⁸ What is limiting the research to determine the effectiveness and efficiency of personnel administration? Nationwide, the median-sized personnel department has a staff of only two or three,⁹ making specialization almost impossible and inhibiting any meaningful research.

It also appears that the typical firm expects little in the way of results from its personnel administration program. In a survey of nearly 1,000 firms in a variety of industries,¹⁰ the personnel objective mentioned most was to attract good employees. Yet this was expressed by less than half the respondents. Other objectives were to increase employee job satisfaction, 12 percent; increase morale, 11 percent; reduce turnover, 10 percent; make better use of compensation dollars, 9 percent; enhance the organization's image with its own employees, 7 percent; and keep out labor unions, 5 percent. Only 6 percent of the respondents indicated that an objective of employee benefit programs was to motivate employees to perform more effectively.

The measurement of the contribution of personnel administration to organizational efficiency is difficult. For example, in the mid-1960s, attention was directed toward the use of human resources accounting. To date, results do not appear promising. "The measurement problem is apparently not going to be solved in the near future. A major concern is that testing under operating conditions has almost ceased and industry's interest in experimentation has drastically declined."¹¹ Most firms that have attempted to capitalize various personnel administration activities have discontinued the practice. While some firms indicate that such methods have internal use, no evidence is reported for such claims. Obstacles that limit the use of human resources accounting include a lack of adequate standards for

measurement of human resources, the costs of additional accounting, the subjectivity in the valuation of human assets, and the lack of proven procedures.

Most firms make little attempt to maximize the potential for personnel administration to motivate employees for maximum productivity. In one study, 60 percent of the responding organizations indicated that they had no formal objectives for communicating information about benefits to their employees.¹² Nearly two-thirds of the firms reported spending \$10 or less per employee per year in communicating the benefits program. It is not surprising, therefore, to find that most employees are little aware of the benefits available to them or that they undervalue the costs and usefulness of the benefits of which they are aware.

It is certainly possible, however, that some firms have developed meaningful measures but have not published the results because their studies provide them a competitive advantage. Experience suggests that such firms are in the smallest minority, however.

SURVEYED ORGANIZATIONS

The findings reported in this survey are intended as a step toward identifying the contributions of personnel administration for employee satisfaction and employee productivity. Each organization discussed in this article cooperated by providing information about their personnel administration practices, by providing certain cost and performance data, and by allowing operative employees to complete a questionnaire about their perceptions of various personnel administration duties. All of the cooperating organizations and their employees are located in the Phoenix metropolitan area.

Bank

The bank selected for the survey is one of the major financial institutions in the Rocky Mountain area in both size and profitability. The employees surveyed are employed in the computer records section in a central location. The work tends to be repetitive. Performance is measured by such factors as items processed for a given time period. The unit is operated on a twenty-four-hour basis. A wide range of skills are required, with many one-of-a-kind positions.

Formalized job analysis has been introduced. Emphasis is placed on equal employment with goals and timetables included in each supervisor's performance evaluation. Varied recruiting sources are used. A selection process has been developed and validated by the

division personnel department, which places emphasis on the weighted application blank format; employee testing has been discontinued.

New employees are given a half-day orientation. Various technical and supervisory training programs are offered with increasing emphasis on courses presented internally. A monthly newspaper and a weekly supplement provide company news and employee features.

Numerous strategies have been introduced to improve employee performance, such as a successful program to reduce time taken for sick leave. The bank states that its wages are higher than those paid by its major competitors, while employee responses to internal surveys indicate that they feel the pay is low but fair. A profit-sharing program is available.

Accident frequency and severity is low for the firm and the industry. The insurance program is considered good but has been controversial within the bank. Three optional insurance programs are available. The work area is clean and the temperature is at a constant, comfortable level, partly to accommodate the computers that are located there. Employees have responded well to background music.

The company has a full-service cafeteria, subsidized 40 percent by the bank. Minimum recreational facilities are provided, but the bank also arranges packaged programs for professional ball games, trips, etc. Physical fitness programs are subsidized. A drug and alcohol counseling program has been in effect for several years and is considered successful.

Eight paid holidays are provided the employees. They also receive two weeks of vacation for two years of service, and a maximum of four weeks of vacation after twenty years of service. Grievances are handled through a combination of open door policy and formalized grievance steps.

Utility

The utility is the largest of the three employers. The firm experienced record profits in the year preceding the survey. The employees included in the study are installers, organized by a labor union, who perform skilled work of a repetitive nature.

The organization does extensive forecasting, which includes planning for personnel requirements. Job design, job analysis, and job evaluation are ongoing processes, for which the company has pioneered much innovative work.

A major objective has been to hire and promote women and minorities. With the exception of

minorities, the company has attracted a sufficient number of job applicants for most job classes, so active recruiting is not required.

Selection is rather formalized involving a six-step process that includes testing and interviewing. The personnel department presents a half-day orientation program for all new employees; in addition, each department provides its own specialized orientation.

Classroom and on-the-job training is provided for each operative level employee. The process of selecting people for promotion to supervision is highly formalized. Approximately 80 percent of supervisory positions are filled through promotion from within. Both prior to and following promotion, a series of self-paced and classroom training programs are required.

At the time of employment, and subsequent to the signing of each new contract with the labor union, a publication of benefits is provided each employee. In-house publications and bulletin boards are also used as means of communication.

Salaries of the surveyed employees are negotiated with the union and tend to be structured. A stock ownership plan is open to all employees. Bonuses up to 10 percent of base pay are provided to those exceeding standards.

A medical plan is also offered. Because the employees are often away from the central medical service of the firm, they receive emergency medical training. The working environment varies due to the varied areas of work assigned the assemblers.

Cafeteria service, which is available to a large number of employees, is not conveniently located for the majority of the installers. Various company-sponsored social, athletic, and service groups have been formed through the support of the personnel department, but are mainly funded by the employees themselves. Counseling is available for personal and job-related problems. A suggestion system is available but is not promoted and is little used.

Employees receive ten paid holidays each year. Employees with one year employment receive one week of vacation, which is increased on a graduated scale up to five weeks for twenty-five years of employment. Retirement benefits are based on years of service and rate of pay; early retirement is available.

A three-step grievance process is established for union members. Many formalized rules have been set for behavior; corrective action or disciplinary action is specified for infractions.

Extensive research has been conducted to determine the effectiveness of various personnel administration ac-

tivities. One such study resulted in the reduction of a training program from fourteen to six days, while tests showed the same level of learning was attained. Another training course was reduced from ninety-six to twenty-eight hours with an annual savings of \$142,000. Studies have been made to determine the costs of grievances and the savings available when grievances are resolved at the first or second step. Similar studies have been carried out to determine costs for each percentage change in employee absences.

Specialty Goods Manufacturer

This is the smallest of the three firms with fewer than 1,000 employees. Compared to the other two firms, the specialty goods manufacturer is neither as extensive in its personnel program nor as financially successful. As stated by one staff member, "We lack organizational measures. The measure for success is profit, but there is no profit."

Employees covered by this survey are mainly low skilled, who perform machine-paced work to produce a variety of small manufactured items. Little is done in the way of job analysis or the development of job descriptions; however, work duties are closely tied to the short cycle machine activities. Relationships have been developed with community organizations in successful efforts to obtain minority job applicants for entry level positions. Hiring is typically done by the personnel director based on an interview with the applicant.

Starting salary is near the federal minimum wage with increases amounting to nearly 50 percent. The company has no incentive pay plan or other forms of financial rewards. Job posting is used extensively to allow employees to transfer to more desirable positions. Few operative employees are believed by management to possess the necessary characteristics for supervision. Training is conducted on the job by the supervisors. The one attempt to provide supervisory training was labeled a disaster when it was concluded that an outside trainer talked over the heads of the supervisors.

No formal grievance system exists, but employees are encouraged to utilize the open door policy, the suggestion box, and contact with the personnel director if they have a complaint.

While the work area is rather stark in appearance, extensive effort has been directed toward keeping it clean, well lighted, and at a comfortable temperature. Minor job accidents have occurred frequently.

A cafeteria is available for day shift employees only; snack wagon is the only food source available for second shift employees. The firm has provided some support for social and recreational activities, but in general, it has been concluded that employees have little interest. Communication is by a monthly newsletter, employee handbooks, and bulletin boards.

Employee counseling is conducted by the personnel director only. A retirement program is offered, although benefits are minimal. Employees receive seven paid holidays, with one week of vacation after one year of employment and two weeks of vacation after two years of employment. Considerable flexibility is permitted for informal time off. At the time of the survey, for the first time in five years, the company had not experienced a temporary layoff due to insufficient business.

The data on which to evaluate performance is limited, but, compared to other units in the organization, the surveyed employees are considered more productive and create fewer personnel problems.

Most of the employees in the surveyed unit are women who have a high school education or less, and earn less than \$7,500 a year.

METHODOLOGY

For each of twenty-nine personnel administration activities listed on the questionnaire, respondents were asked to indicate on a five-point scale (1 for least and 5 for most) how much they were aware that their employer was involved in the activity. That is, they were asked to give their perception of their employer's investment or commitment in the various activities of personnel administration. They were also asked to indicate, again on five-point scales, their level of satisfaction with each activity, and how much they believed their performance was affected by each activity. Thirty-eight bank employees, twenty utility employees, and fifty-two specialty goods manufacturer employees were surveyed.

Tables 2 (bank), 3 (utility), and 4 (specialty manufacturer) summarize the results of the study. On the left of each table are the lists of personnel administration activities, each categorized according to its appropriate function. The remaining columns provide the profiles of mean responses of the respondents. The left column indicates the average perception of the amount the firm is involved in each personnel activity. The next column indicates the level of satisfaction which the respondents report they felt as a result of the

personnel activity. The right hand column indicates the level of impact the respondents believed that each personnel activity had on their performance.

The weaknesses of self-reports as used in this study are recognized,¹³ but it is believed that this approach is a practical means to begin research on the impact of personnel administration practices on employee performance and satisfaction.¹⁴

RESULTS

The data indicate, in general, that the more the respondents believed that their employer provided a particular personnel activity, the more they felt that the activity had a positive effect on their satisfaction and the more they perceived the activity had a positive influence on their job performance.

Bank

The bank employees, Table 2, rated the bank as being involved an average of 3.8 on the 5-point scale for all of the twenty-nine personnel activities. Both average satisfaction and average perceived performance were also 3.8. These responses are higher than those reported by the employees of the other two firms. The bank employees reported that their employer was highly involved (above 3.5) for twenty-three of the personnel activities, and little involved (below 2.5) for only one activity. They also indicated that they were highly satisfied (above 3.5) with nineteen of the activities, and dissatisfied (below 2.5) for none. They also reported that nineteen of the activities had a positive effect on their performance (above 3.5), while none of the activities had a negative effect (below 2.5).

Bank employees perceived that the bank was most involved overall in the personnel administration function of developing (orientation, training, and personnel administration communication), followed by the identifying function (human resources planning and job descriptions) and the retaining-compensation function (wage and salary, incentive pay, and profit sharing/stock options).

Utility

The utility company employees, Table 3, rated their employer as being involved in all of the personnel activities an average of 3.3, and both their satisfaction and performance as a result of the personnel activities an average of 3.4. Ten of the personnel activities were

identified as those in which the company was highly involved, and four activities in which they were little involved. The employees indicated twelve of the activities that contributed highly to their satisfaction and two that contributed to their dissatisfaction. Twelve of the activities were perceived by the employees as having a positive effect on their performance and one that had a negative effect.

The employees perceived that their firm was most involved overall in the identifying function (human resources planning and job descriptions), followed by the retaining-environment function (medical insurance, medical service, healthful working conditions, safe working conditions, food service, social and recreational service, and vacations and holidays).

Specialty Goods Manufacturer

In Table 4, the average involvement by the specialty goods manufacturer for all personnel activities (as perceived by the surveyed employees) was 3.3. Average satisfaction was 3.6, and average perceived impact on performance was 3.7. The specialty employees indicated that their firm was much less involved in personnel activities than was reported by the employees of the other two firms. Indeed, the records of the firms confirm that this was an accurate evaluation. Specialty employees reported that there were only eight activities for which the firm was highly involved and four for which the firm was little involved. Nonetheless, these employees reported a greater number of the personnel activities had a positive effect on both their satisfaction and performance. Twenty-two of the personnel activities were felt to have a positive effect on satisfaction, while none had a negative effect. For perceived performance, twenty-two had a positive effect and none had a negative effect.

Specialty employees perceived their employer as being most involved in the identifying function (human resources planning and job descriptions), followed by the obtaining function (recruiting and selecting) and the measuring function (performance appraisal, morale surveys, and personnel administration research).

PERSONNEL ADMINISTRATION AS AN INVESTMENT

A measure of the effectiveness of the personnel program is the level of satisfaction and job performance resulting from the investment by the firm in the various personnel activities. For example, if employees per-

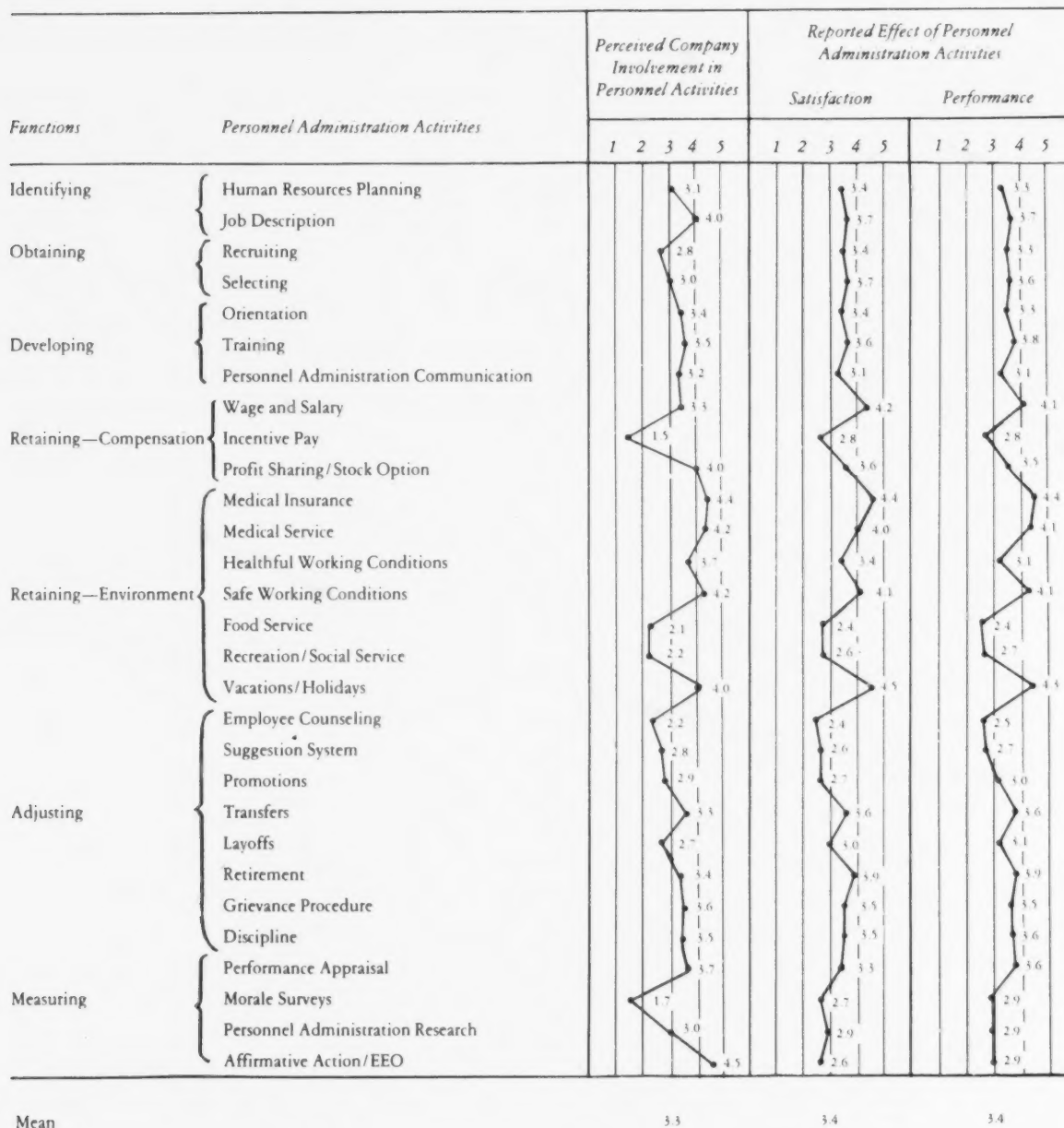
TABLE 2
 PROFILE OF PERSONNEL ADMINISTRATION ACTIVITIES
 AS REPORTED BY BANK SERVICE UNIT OPERATORS
 (N = 38)

Functions	Personnel Administration Activities	Perceived Company Involvement in Personnel Activities					Reported Effect of Personnel Administration Activities									
							Satisfaction					Performance				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Identifying	Human Resources Planning					3.8					4.1					4.0
	Job Description					4.1					3.9					4.1
Obtaining	Recruiting					5.1					3.4					3.6
	Selecting					3.6					3.8					3.9
Developing	Orientation					4.2					4.2					4.3
	Training					4.4					4.4					4.4
	Personnel Administration Communication					4.4					4.4					4.1
Retaining—Compensation	Wage and Salary					3.8					3.8					4.2
	Incentive Pay					4.1					4.5					4.5
	Profit Sharing/Stock Option					3.9					3.6					3.3
Retaining—Environment	Medical Insurance					4.3					4.0					3.7
	Medical Service					2.9					3.3					3.1
	Healthful Working Conditions					3.7					3.5					3.6
	Safe Working Conditions					4.5					4.0					4.1
	Food Service					2.3					2.6					2.8
	Recreation/Social Service					3.3					3.4					3.1
	Vacations/Holidays					3.7					4.0					4.2
	Employee Counseling					4.1					3.7					3.6
Adjusting	Suggestion System					3.5					3.4					3.4
	Promotions					4.0					4.1					4.2
	Transfers					3.7					3.6					3.7
	Layoffs					4.2					3.5					3.7
	Retirement					3.6					3.5					3.5
	Grievance Procedure					3.8					3.6					3.5
	Discipline					3.9					3.6					3.8
	Performance Appraisal					4.3					4.1					4.2
Measuring	Morale Surveys					2.7					3.3					3.1
	Personnel Administration Research					3.6					3.4					3.4
	Affirmative Action/EEO					4.4					3.7					3.4
Mean		3.8					3.8					3.8				

Source: Survey conducted by the author.

TABLE 3

PROFILE OF PERSONNEL ADMINISTRATION ACTIVITIES
AS REPORTED BY UTILITY COMPANY INSTALLERS
(N = 20)



Source: Survey conducted by the author.

TABLE 4
 PROFILE OF PERSONNEL ADMINISTRATION ACTIVITIES
 AS REPORTED BY SPECIALTY GOODS MANUFACTURERS ASSEMBLERS
 (N = 52)

Functions	Personnel Administration Activities	Perceived Company Involvement in Personnel Activities					Reported Effect of Personnel Administration Activities									
							Satisfaction					Performance				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Identifying	Human Resources Planning					3.5					3.8					3.8
	Job Description					4.5					4.2					4.3
Obtaining	Recruiting					3.8					3.9					4.0
	Selecting					3.2					4.0					4.1
Developing	Orientation					3.6					4.1					4.1
	Training					3.0					3.7					3.8
	Personnel Administration Communication					3.4					3.5					3.6
Retaining—Compensation	Wage and Salary					2.8					3.7					3.8
	Incentive Pay					3.3					3.7					3.8
	Profit Sharing/Stock Option					1.4					2.5					2.5
Retaining—Environment	Medical Insurance					4.2					3.9					3.9
	Medical Service					4.2					4.3					4.4
	Healthful Working Conditions					3.2					3.9					3.8
	Safe Working Conditions					3.6					4.0					4.1
	Food Service					2.9					3.3					3.2
	Recreation/Social Service					2.3					2.9					2.9
	Vacations/Holidays					3.5					4.0					4.0
	Employee Counseling					2.0					2.8					2.8
Adjusting	Suggestion System					3.2					3.2					3.3
	Promotions					3.3					3.1					3.2
	Transfers					3.5					3.7					3.8
	Layoffs					3.0					3.6					3.6
	Retirement					2.2					2.9					3.0
	Grievance Procedure					3.3					3.4					3.5
Measuring	Discipline					3					3.9					3.8
	Performance Appraisal					4.1					4.3					4.3
	Morale Surveys					3.1					3.6					3.6
	Personnel Administration Research					3.2					3.7					3.8
	Affirmative Action/EEO					4.0					3.9					4.0
Mean						3.3					3.6					3.7

Source: Survey conducted by the author.

ceived that the firm has been involved in a particular personnel activity at the level of 3.0 and their perception of the impact of that activity on their job performance is above 3.0, then the employees feel that the firm is receiving a positive result from their investment. If their perception of the impact of the activity on their performance is below 3.0, the employees have concluded that the firm has not received a full return for their investment.

For the employees from the three firms surveyed here, their satisfaction and perceived performance were greater than what they believed their firms had invested for the personnel activities of human resources planning, recruiting, selecting, incentive pay, food service, vacations and holidays, and morale surveys. From the employees' point of view, these were the most cost-effective personnel activities provided by their organizations. Bank employees reported satisfaction and performance results greater than the perceived amount invested by their firms for nine activities, the utility employees reported fourteen, and the specialty manufacturer employees reported twenty-four. The least return in satisfaction and performance for bank and utility employees was for affirmative action/EEO.

For seven activities, the respondents indicated they were highly satisfied and they believed that the activities had a highly positive effect on their performance, regardless of the level of employer involvement in that activity. These activities, which resulted in the most positive results (above 3.5) for all three companies were job description, training, wage and salary, medical insurance, safe working conditions, vacations and holidays, and transfers. Even minimal commitment by the firm in these activities resulted in highly positive reaction by the employees. Least positive results (below 2.5) were reported by the specialty employees for profit-sharing, where there was no profit-sharing program, and by the utility employees for food service, where the surveyed employees did not have convenient access to the cafeteria. Even in these few cases of negative response, however, the employees reported that the results for satisfaction and perceived job performance were nonetheless greater than their perception of the amount invested by their firms in those activities.

CONCLUSIONS AND IMPLICATIONS

For the three work units included in this study, the following conclusions about personnel administration activities can be drawn:

- Employees are aware of the personnel administration activities in their organizations and have a clear perception of the level of commitment their firm has in the various activities.

- The greater the amount of commitment by the firm in a particular personnel administration activity as perceived by the employees, the greater is the employees' satisfaction with that activity.

- The greater the amount of commitment by the firm in a particular personnel administration activity is perceived by the employees, the greater is the employees' perception that their job performance is positively influenced by the activity.

- As perceived by the employees, the most cost effective personnel activities provided by their employer were human resources planning, recruiting, selecting, incentive pay, food service, vacations and holidays, and morale surveys.

- As perceived by the employees, the most effective personnel activities for obtaining the highest level of job performance and satisfaction were job description, training, wage and salary, medical insurance, safe working conditions, vacations and holidays, and transfers.

The results presented here provide considerable guidance for management and the personnel department in the conduct of the personnel administration program. The study indicates that employees do indeed believe that the personnel administration program has a positive influence on their job performance and on their satisfaction.

Personnel administration is here to stay. Its programs are deeply institutionalized in our society and pressure to continue and increase them comes from government, labor unions, competition, employees, society as a whole, and even from management itself. It is management's responsibility to maximize organizational efficiency by assuring that the individual personnel activities and the total personnel program are administered in the most effective manner. However, most firms have little awareness of the value of their various personnel activities other than the need to have them in the attempt to attract and retain employees.

It can be valuable to survey employees to determine their awareness of, and their desire for existing personnel activities. Furthermore, the employees should be informed completely and continuously about the personnel program. From this study, for example, it was determined by actual organizational data that both the bank and the utility have rather extensive and sophisticated personnel programs. However, the bank employees evaluated their firm's level of involvement in their per-

sonnel program much higher than did the utility employees. For one thing, the bank is perceived by its employees as being more active in personnel administration communication. From the employees' point of view, the bank is doing a better job of informing them of what is available.

The firm should determine if there is an optimum mix of the various personnel activities. Given limited resources, the greatest proportion should go to those most likely to provide the firm with the greatest return. The bank is reported by its employees as emphasizing personnel activities that have a more direct and immediate impact on their personnel development to aid them in doing a better job and on their compensation to reward them for doing an effective job. The bank employees perceive that their firm is concentrating most on the developing function (orientation, training, and personnel administration communication).

The utility employees, in contrast, reported that their firm emphasizes primarily the personnel function of identifying (human resources planning and job description) followed by the retaining-environment function (medical insurance, medical service, healthful working conditions, safe working conditions, food service, recreation and social service, and vacations and holidays). The bank employees perceive that their firm is emphasizing activities that are more likely to have a direct effect on job performance and more direct rewards that are related to performance, while the utility employees perceive that their firm emphasizes activities that are less directly related to performance or immediate satisfaction.

Management needs to recognize that the characteristics of the employees themselves can affect

their perceptions of, and reactions to, the personnel program. The utility company program overall is much superior to that of the specialty goods manufacturer in variety of activities and total investment, yet employees from both organizations report their awareness of the firm's total personnel program, on average, to be the same. Moreover, the specialty goods employees report a higher average satisfaction from their personnel program and a belief that the program has a more positive effect on their performance than do the utility employees. Both groups of employees reported approximately the same level of personnel administration communication provided by their firms.

The difference in impact could be explained in part by the fact that the utility employees are part of a large, profitable organization, and the workers themselves are skilled in their trade. The specialty employees work for a firm that has not been profitable for much of its history and has experienced occasional layoffs. The employees themselves are unskilled. Therefore, the expectations of the specialty employees could be much less than those of the utility employees. As a consequence, their appreciation for what they do receive could be much greater. Their satisfaction is greater and they believe they demonstrate their appreciation by greater effort.

The results of this study are positive and encouraging. Studies of this nature in every organization as a beginning effort, combined with increasing attention to the relationships between personnel administration and organizational effectiveness, can increase the likelihood that personnel administration is not just another major cost of the organization, but is truly an investment in organizational productivity.

¹"Labor Letter," *Wall Street Journal*, January 6, 1980, p. 1.

²"Employee Benefits: Now a Third of Payroll," *Nation's Business*, October 1976, p. 37.

³Walter E. Greene, "Visible Management Planning," *Personnel Administrator*, 22(January 1977): 35-37.

⁴"Editor to Reader: The New Thrust in Personnel," *Personnel Journal*, 58(May 1979): 278-280.

⁵Harold C. White and Michael N. Wolfe, "The Role Desired for Personnel Administrator," *Personnel Administrator*, 25 (June 1980): 87-98.

⁶W. Rabe, "Yardsticks for Measuring Personnel Department Effectiveness," *Personnel*, 44(January/February 1967): 56-62.

⁷Peter F. Drucker, *The Practice of Management*, (New York: Harper and Row, 1954) p. 273.

⁸Harold Flanders, "The AT and T Company Manpower Laboratory: circa 1971," *Proceedings*, Academy of Management, 1971, pp. 203-206.

⁹Dale Yoder and Herbert G. Heneman, "PAIR Jobs, Qualifica-

tions, Careers," in *ASPA Handbook of Personnel and Industrial Relations*, eds. Dale Yoder and Herbert G. Heneman, (Washington, D. C.: Bureau of National Affairs, 1979) p. 8:19-58.

¹⁰Richard C. Huseman, John B. Hatfield, and Richard W. Driver, "Getting Your Benefit Programs Understood and Appreciated," *Personnel Journal*, 57(October 1978): 560-566 +.

¹¹Jacob B. Paperman and Desmond D. Martin, "Human Resources Accounting: A Managerial Tool?" *Personnel*, 54 (March/April 1977): 41-50.

¹²G. W. Hettenhouse, W. G. Lewellen, H. P. Lanser, and H. L. James, "Communicating the Compensation Package," *Personnel*, 52(1975): 19-30.

¹³Herbert G. Heneman and Donald P. Schwab, "Work and Rewards Theory," in *ASPA Handbook of Personnel and Industrial Relations*, eds. Dale Yoder and Herbert G. Heneman, (Washington, D. C.: Bureau of National Affairs, 1979) p. 6:1-22.

¹⁴Edward E. Lawler, *Pay and Organization Effectiveness: A Psychological View*, (New York: McGraw Hill, 1971) p. 45.

Credit Laws: Some Recent Changes

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In the past year, substantial changes have occurred in the American economic climate, which have particularly affected the extension of credit. Lenders want more in terms of interest, repayment terms, and the transfer of loans. Borrowers want greater access to credit, favorable interest and repayment terms, and a clear understanding of the contract. These two positions have been reviewed by state legislatures and federal agencies in the past year during consideration of laws and rules designed to benefit both lenders and borrowers in an economy that relies heavily on the extension of credit. The purpose of this article is to discuss the new federal and Arizona state laws passed within the past year and to consider recent case decisions and proposed laws that could affect both lenders and borrowers.

THE INTEREST RATE

The area of credit transactions most affected by economic fluctuations is probably the amount of in-

Recent changes have occurred in laws relating to the extension of credit, particularly those that relate to the legal interest rate, usury, installment loans, auto loans, and retail credit.

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terest charged. Because of fluctuations in the prime rate, mortgage rates, and other interest rates, state legislatures were forced to act quickly to bring the legal limits on interest rates in line with current commercial lending rates. The Arizona Legislature passed a law¹ in December, 1979, which changed virtually all the legal limits on interest charges. Later, in April 1980, two more laws² were passed that made still more changes in the interest laws. Both before and after these changes, interest rates varied according to the type of transaction involved. Each type of interest rate and the changes are discussed separately in the following sections.

Legal Rate

Every state has set forth a rate of interest referred to as the legal rate, which is the amount of interest in a loan agreement if the people involved cannot agree on an interest rate. A classic example is a person who signs an IOU for \$600 without providing for the interest rate. The legal rate of interest would be applied. In Arizona, before the changes last spring, the legal rate was 6 percent per year.³ After the April changes, this amount was raised to 10 percent per year.

Traditionally, the legal rate of interest is lower than commercial and consumer rates. When the legal rate was changed from 4 percent to 6 percent in 1978, 6 percent was low but not unreasonable. With financial changes, the 10 percent is currently still low, but again, not generally considered unreasonable. It should be re-

membered that the parties are free to agree to a different interest rate and thereby prevent application of this section.

Directly related to the legal rate is the rate of interest to be paid on legal judgments. Once someone obtains a court judgment, interest accrues on the amount of that judgment until it is paid. Before the amendments, Arizona's legal judgment rate was 8 percent per year.⁴ With the changes of 1980, a legal judgment rate no longer exists. The new section provides that the judgment rate be "specified in the judgment." The only restriction is that the rate provided in the judgment may not exceed the "maximum legal rate" (discussed later in this article). This is the first time that a specific rate has not been set forth in the laws. Two theories for the change could be advanced. One theory is that the legislature may have sought to bring judgment rates, which are usually lower than commercial rates, more in line with existing commercial interest rates. A second theory is that the legislature anticipated still further changes in interest rates and that this general language would not require reworking each interest law when economic changes occur.

It is relevant to note that in December, 1979, the legislature had passed a bill creating a new section which followed the legal and judgment rate section. This new section would have raised the legal rate to 12 percent after January 1, 1982. However, the 1980 legislation repealed this additional section and ended its short four-month life.

Usury and Excessive Rates

Originally, the law pertaining to usury and the charging of excessive interest⁵ provided that if anyone contracted to receive, on a loan of money or goods, more than eight dollars per one hundred dollars per year, the rate was usurious, and as penalty, the party forfeited all interest on the loan. The courts were very strict in their enforcement of this original section. In *LaBarr v. Tombstone Terr. Mint*,⁶ a group of five investors agreed to loan the sum of \$300,000 to an Arizona businessman with the loan to be repaid in six monthly installments of \$50,000 each. Interest on the note amounted to \$30,000 and was payable in installments of \$15,000 each. In addition, the borrower was to pay a "financier's fee" of \$20,000, payable in two installments of \$10,000 each. The note also provided that in case of default or late payment, additional interest of 2 percent per month would be charged. The business defaulted on the loan and the five investors

sued to collect on the note. The investors asked the court to permit at least part of the usurious interest to be paid. However, the court stated that the loan was clear in its requirements that all interest be forfeited.⁷ Violation of the usury law thus brought costly consequences to the lender.

Under the usury section as amended in April, the word *usury* was omitted from the section completely and the section was changed similarly to the judgment rate section. Under the change, a party forfeits interest if the amount of interest charged is more than the "maximum permitted by law." Again the change appears to be in anticipation of future economic changes and attempts to avoid the problem of amending every section as interest rates fluctuate.

Installment Loans

The next change was not a change in existing law, but was rather the creation of a new law dealing with installment loans and the appropriate interest rates.⁸ This section was responsible for the most dramatic changes in permissible interest rates, providing not only for the appropriate rate, but also for the methods of computing interest. Summarizing, this new section provided the following:

- On installment loans of \$5,000 or less, the interest rate may not exceed the rate provided in the contract. (This was a lift of the ceiling on interest rates; the maximum is now whatever the party wishes to charge.)

- Interest may be computed in one of two ways: (a) at a single annual percentage rate (based on the actuarial method); or (b) may be precomputed on the basis of the number amount and date of payments and then added to the loan amount.

Much of the section dealt with the problems of prepayment and involved substantial changes. For example, if the interest is precomputed and the loan is prepaid in full by cash or refinancing, the lender may collect only the earned interest and late fees, if any. Furthermore, the borrower is entitled to receive a rebate on the precomputed interest charges. A surprising change was that the amount of this rebate may *not* be computed by the "Rule of 78s," which is one method used to determine the borrower's rebate in the event of prepayment. Under the Rule of 78s, also referred to as a "sum of the digits" method, a debtor may end up paying more by paying early. For example, an individual borrows \$1,500 with total interest or finance charges of \$211.68 and agrees to repay this amount in twelve monthly installments. After six months, the borrower

wishes to repay the full amount. The Rule of 78s is a method of determining how much interest or finance charge the lender has earned and how much belongs to the borrower. The rule operates in a manner similar to the method of depreciation based on sum-of-the-years-digits. The following is an explanation of how the rule would work in the example:

A consumer who prepays the balance of a \$1,500 loan on August 1 (on the sixth of his twelve installments) is *not* entitled to rebate of one-half of the \$122.68 precomputed finance charge since that person has had use of more than half of the principal during the first six months of the loan. The key fact is that the principal is constantly declining during the life of an installment loan. The Rule of 78s is based on the idea of a 12-month loan repayable in equal installments. A borrower who takes out a \$1,200 loan has the use of twelve \$100 bills the first month, eleven \$100 bills the second month, ten the third month, and only one the last month. During the full twelve months, the person therefore has the use of seventy-eight \$100 bills (12 plus 11 plus 10 . . . plus 1). The number 78 becomes the denominator of the fraction, while the numerator depends upon when the prepayment takes place. If prepayment is made at the seventh installment, 57/78 of the total finance charge has been earned by the creditor (the numerator is the sum of 12, 11, 10, 9, 8, and 7). In the consumer's case mentioned previously, this would amount to 57/78 of \$211.68, or approximately \$155. Therefore, the consumer's rebate due on August 1 would be approximately \$57.⁹

In general terms, an 18 percent annual percentage rate loan prepaid in six months would result in an increased yield of 1.2 percent, and if prepaid in twenty-five months, an increase of .2390 percent. This new Arizona section prohibits the use of the Rule of 78s method and requires the lender to charge the debtor who wishes to repay the loan only the amount due at that time and also to rebate a portion of the interest charges.

Under the changes, the method of computing the rebate is based on a thirty-day month, a 360-day year or on the actual number of days left in the loan period. In comparison to the Rule of 78s then, this new formula would have a denominator of days and a numerator consisting of the day in the loan period on which the prepayment occurred. For example, on a five-year loan prepaid at the end of the second year, the denominator would be five times 360 or 1,800 and the numerator would be two times 360 or 720. Thus, using the same \$1,500 loan with \$211.68 in finance charges, the total

finance charges earned would be 720/1800 of \$211.68 or approximately \$84.67, and the consumer's rebate would be \$127.01. In this example the lender could also compute the rebate on the basis of thirty-day months each or could use 365 or 366 as the basis for the yearly computation. It should be noted, however, that installment loans consummated or refinanced prior to October 1, 1980 may still use the Rule of 78s for computing prepayment rebates.

This new section permits the lender to charge a late or delinquent fee and sets a maximum for such fees. If an installment is not paid within ten days of its due date, the lender may charge the lesser amount of 5 percent of the installment or ten dollars.

Part of this new law deals with credit card accounts or checking account credit lines granted by financial institutions — banks, trust companies, savings and loans, credit unions and small lenders.¹⁰ The maximum interest rate that may be charged on this type of credit transaction is the amount stated in the contract. Financial institutions may charge the same delinquent penalty that may be charged on installment contracts.

One final portion of this new law permits the lender or financial institution to make additional charges to the borrower, which could include filing fees (in the event a lien or security interest is taken as collateral), escrow fees, notary fees, and title report fees. All installment contracts may include provisions for payment of court costs and attorney fees in the event of litigation to enforce the contract.

Motor Vehicle Installment Sales

Under previous laws, installment contracts for the purchase of motor vehicles were covered separately under the Motor Vehicle Time Sales Disclosure Act, which included provisions for the contract terms, the finance charges and insurance charges. For example, one section dictated the maximum finance charges that were permitted in a motor vehicle purchase loan.¹¹ Loans on motor vehicles one year old or less could carry a maximum rate of eight dollars per hundred per year. Loans on motor vehicles older than one year could have a maximum rate of twelve dollars per hundred.

The major changes in this Motor Vehicle Act pertained to interest charges. Quite simply, the legislature repealed the section on installment loans in the Motor Vehicle Act so that the maximum amount that can be charged on a vehicle loan is the amount provided in the contract. Furthermore, the Rule of 78s cannot be used as a method of computing prepayment rebates, but

rather the method for general installment sales contract must be used. The language in the motor vehicle section is identical to that of the installment sales section with the exception that in the Motor Vehicle Act, there is a provision that permits and sets procedures for the transfer of motor vehicle loan contracts, which differ from other installment loan contracts.

One additional fundamental change occurred in the section dealing with refinancing a motor vehicle installment contract. Originally, this section provided for refinancing based on the time-price differential, which is a method of charging interest on a contract but which has traditionally been higher than the legal or maximum interest rate. The name of the time-price differential explains its purpose. A seller of goods was entitled to a certain amount of money for accepting payments received for an item over a period of time, and also was entitled to receive additional payment for the expenses of collection, default or repossession. These charges were not called "interest" and because of the label, sellers were able to collect more in their contracts than was obtainable by a lender in a straight loan of money.

Because the Motor Vehicle Act was amended to provide for a finance charge "set forth in the contract," the term "time-price differential" is no longer used and hence was eliminated from the refinancing section. The refinancing section now provides that the refinancing charge will be based upon the rate set forth in the contract.

Retail Installment Sales Transactions

The final change in the new interest rates was brought about by the addition of laws specifically governing retail installment contracts. "Retail installment contracts" are defined in this new legislation as any retail installment contract except charge accounts, and includes chattel mortgages (mortgages or liens on personal property) and security agreements. The sections cover any transaction in which a retail buyer purchases goods or services from a retail seller through the use of a retail installment contract.

The maximum interest that may be charged in a retail installment transaction is the amount provided for in the contract. It may be computed on the actuarial method or precomputed as if all payments will be made on the dates scheduled. The actuarial method provides that when no payment is made, or the payment is insufficient, the unpaid amount of the finance charge is added to the amount financed, and the borrower continues

to compound interest upon interest. On the precomputed method, unpaid interest is accumulated and not capitalized. The precomputed method will result in a slightly smaller finance charge.¹²

If there is a prepayment of the amount financed, the borrower's rebate may not be computed pursuant to the Rule of 78s, but is computed in the same manner as the general installment contract. Late charges and default costs are also the same as for installment loans. Again, these new laws do not apply to contracts entered into before October, 1980.

Retail installment contracts may be transferred, but the new holder of the contract must notify the buyer of the transfer, or the buyer may properly continue making payments to the original seller. Also under this new section, the seller is required to furnish the buyer with periodic statements. Those periodic statements may be based on a calendar month billing period or upon a similar monthly billing period established by the seller. The periodic statement must be sent within fifteen days from the close of the billing cycle. The penalty for violation of any of the provisions relating to retail installment statutes is the forfeiture of the finance charges.

THE LEGISLATIVE HISTORY

Before these final credit provisions were passed, the legislature made two or three changes in each section. For example, at one point there was a specific provision dealing with real estate mortgages that was repealed within a month of passage. In addition, the original retail installment and motor vehicle contracts carried specific maximum rates rather than the general provision permitting the parties to agree to an amount of finance charge.

There is still need for clarification of some of the provisions. For example, it is not clear which section governs credit card transactions, other than those from financial institutions. The need for clarification may have resulted from the haste in which the statutes were enacted because of the economic climate. Future sessions of the legislature may bring still further changes in the already modified credit laws.

The National Changes — Holder in Due Course Doctrine

The significant changes in Arizona's interest rates were typical of the dramatic changes occurring in other states. However, the federal government also made changes in credit transactions, the most significant of which related to the transferability of credit contracts

and the rights of transferees of such contracts. The rule governing such transferability is referred to as the "Holder in Due Course Doctrine." This rule and its changes were promulgated by the Federal Trade Commission (FTC).

The Holder in Due Course Doctrine deals specifically with special types of contracts — commercial paper. Commercial paper, in its many forms, takes the place of cash in our modern economy. For example, a consumer is likely to pay for a large purchase by signing a check or a promissory note, both of which are forms of commercial paper. If the consumer executes a promissory note separate from the sales agreement, the seller then may discount (sell) the instrument to a lender. If the lender takes the instrument in good faith, for value (by paying for it), prior to maturity, and without any defects in the instrument or its creation, the lender achieves the special status as a "holder in due course." A holder in due course enjoys the greatest protection possible as a new holder of the contract. This protection is provided in order to achieve liquidity and confidence in the commercial paper market. A holder in due course is not required to look behind the initial obligation to determine whether any problems might exist. It was felt that to require them to do so would defeat the economic viability of treating commercial paper as cash equivalent. Thus, even though the product may have been defective, or the seller may have intentionally misrepresented the product or unjustifiably refused service or repair as promised, the lender (contract holder) could still demand payment. The consumer, however, would have to look to the seller for relief. The effect was that the consumer's duty to pay the lender was separated from the seller's reciprocal contractual obligations.

Although only in piecemeal fashion, the courts began preserving some of the consumer's personal claims and defenses against the holder of the paper on the theory that the holder did not take the instrument in good faith. Reasons advanced for the lack of good faith contention included the sale of the note at a considerable discount, the holder's knowledge of many complaints against the seller, or close connections between the seller and the holder. Thus, a consumer would not have to pay if the new contract holder knew of a salesman's unethical tactics or if the contract was bought for an unreasonably low price.

It was not until 1976, when the Federal Trade Commission passed the Federal Holder in Due Course Doctrine¹³ however, that consumers were protected from the holder in due course defenses. The FTC regulation generally provided that finance companies in consumer

credit transactions purchased notes subject to all consumer claims and defenses against the seller of the goods or services. The effect of the regulation was the elimination of the Holder in Due Course Doctrine in most consumer credit transactions.

One original FTC requirement was that the following language be included in any consumer credit contracts in ten-point boldface type:

NOTICE

Any holder of this consumer credit contract is subject to all claims and defenses which the debtor could assert against the seller of goods or services obtained pursuant hereto or with the proceeds hereof. Recovery hereunder by the debtor shall not exceed amounts paid by the debtor hereunder.

One glance at the above should convince the reader that very few people understood their rights. That language has now been changed to read:

This credit transaction finances a purchase. All legal rights which the buyer has against the seller arising out of this transaction, including all claims and defenses, are also valid against the holder of this contract. The right to recover money from the holder under this provision is limited to the amount paid by the buyer under this contract.

A claim is a legally valid reason for suing the seller. A defense is a legally valid reason for not paying the seller. A holder is anyone trying to collect for the purchase.

The remaining changes are intended to make the provision more understandable by consumers without changing its legal significance. The new rule also states that where required by law, the above provision must be written in Spanish. The term "notice" is deleted from the new language to clarify that the language is not merely informational but must be included in contracts as a legally binding obligation. Because of the original Holder in Due Course Doctrine, the lender's risk is being increased in the event of the seller's misconduct. To minimize the risk, the lender has a vested interest in refusing to buy a paper from a merchant who has not demonstrated his ability to stand behind his merchandise. The lender will want to investigate merchants with which he will become affiliated.

Penalties for failure to include this notice provision are found in Section 5 of the FTC Act under which consumers may recover damages from the violating seller. The notice provision protects the consumer and the section allows the consumer to act as an enforcer.

The Arizona modification of the interest statutes reflects a desire on the part of the legislature to change with a fluctuating economy. The amendments to the Holder in Due Course Doctrine illustrate trends toward

consumer protection and the readability of contracts. Both trends demonstrate the need for lenders to review legislative and administrative changes frequently in order to comply with the law. Lenders must also realize that increased costs may result from this updating procedure and also from the changes themselves if new contracts and forms are to be printed. The area of credit is one that is frequently and drastically changed. Recent modifications indicate that the pattern will continue.

¹House Bill 2020

²Senate Bills 1352 and 1341

³A.R.S. 44-1201A

⁴A.R.S. 44-1201B

⁵A.R.S. 44-1202

⁶119 Arizona 283, 580 p. 2d 744 (1978)

⁷A.R.S. 44-1202

⁸A.R.S. 44-1205

⁹12 C.F.R. § 226

¹⁰A financial institution is not defined in this section, but rather the law relies on the definition from the banking law section (A.R.S. 6-101).

¹¹A.R.S. 44-291

¹²These methods of computing finance charges are also applicable in the general installment contract section and in the Motor Vehicle Installment Contract Act.

¹³16 C.F.R., Sec. 433.9

Phoenix Family Budget: 1980

ROBERT T. KEIM
SUSAN B. SWIRSLEY

In 1980 a hypothetical Phoenix area family of four required \$24,402 to maintain a moderate standard of living. This figure represents a 9.1 percent increase over the adjusted 1979 budget level. These numbers are the result of a study conducted by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. The study was done in cosponsorship with Valley National Bank. Items in the budget, based on consumption patterns determined by the United States Bureau of Labor Statistics (BLS), are directly priced during the fourth quarter each year.

The Phoenix Family of Four Budget study is based on the methodology developed by the Bureau of Labor Statistics as described in Bulletins 1570-1 and 1570-3 (Autumn, 1966). Products in the budget, specifications

describing each item, and quantities allowed were set by the BLS, based on consumer expenditure surveys done in 1963. These surveys showed the goods and services that families were actually purchasing at the time. The contents of the budget provided for a lifestyle described as moderate and included the number of children, maintenance of health and social well-being along with participation in community activities. The budget does not reflect actual average expenditures of a family of four, but instead represents "the collective judgment of families as to what is necessary and desirable to meet the conventional and social as well as physical needs of families of the budget type."¹

The budget figures are determined for a very specific family of four described as typical of urban center United States families in 1963. Its members include a 38-year-old husband employed full time, a wife not employed outside of the home, a 13-year-old son, and an 8-year-old daughter. The family is assumed to be well established in the community and in good health. The couple has been married fifteen years and the husband is an experienced worker in his field. The family has accumulated an average inventory of home furnishings, clothing, major durables, and other items. Three-fourths of the described families are considered homeowners with mortgage payments on a house they purchased eight years earlier. The remaining one-fourth are renters. This ratio corresponds with current information regarding Phoenix's homeowner-renter ratio.²

Specifications in the study, along with the weights applied to the goods and services, have not been revised

Taxes, Medical Care, Personal Care, and Transportation accounted for the largest percentage increases in the Urban Family of Four Budget. The budget reflects a 9.1 percent increase over the revised 1979 budget for an urban family of four.

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and continue to be based on the needs of the early 1960s family. As a result they do not necessarily reflect the needs or desires of a current family of four. Today's families would generally change their consumption patterns to some extent to respond to the fluctuation of prices and available commodities. Consumers normally substitute lower priced goods and services for those that have had rapid price increases. Such substitutions are not included in this budget.

Since consumption changes are not considered, the Urban Family of Four Budget (UFFB) is most useful in determining the change in prices of certain nearly identical goods from year to year in the Phoenix Metropolitan area. These increases and decreases in price may be more valuable than the dollar figures cited for actual living costs.

Phoenix is *not* one of the urban centers on which the Bureau of Labor Statistics keeps Family of Four or Consumer Price Index data. To fill this void, the Bureau of Business and Economic Research has produced the Urban Family of Four Budget study since 1969. The study is done according to the original specifications: Data is collected by direct pricing of approximately 400 consumer goods and services. The BLS, on the other hand, direct priced for the *last* time in 1969. The current figures for other cities are determined by updating the 1969 direct prices by components of the Consumer Price Index. Due to the difference in methodology, the figures cited in the Metropolitan Phoenix study *cannot be compared* accurately to those issued by the BLS for other cities. The Phoenix study can *only* be compared with that done in Tucson by the Division of Economic and Business Research, College of Business and Public Administration, University of Arizona since their methodology is comparable. The results of a revision of this study to allow comparison of the Phoenix data to that of the cities prepared by the BLS will be released soon.

FAMILY OF FOUR BUDGET COSTS

A hypothetical Phoenix family of four required \$24,402 to maintain a moderate standard of living in 1980. This budget reflects a 9.1 percent increase over the revised 1979 budget for the same family unit. The categories having the largest relative increase in prices in 1980 are taxes (14.7 percent), medical care (14.2 percent), personal care (13.3 percent), and transportation (12.4 percent). Each of these categories also had substantial price increases in 1979. Table 1 details a comparison of all the major categories of the Phoenix

TABLE 1

PHOENIX FAMILY OF FOUR BUDGET COSTS AND PERCENTAGE CHANGES, 1979-1980

	1980	1979 (Revised)	Percent Changes
Total Budget	\$24,402	\$22,362	9.1
Total Family Consumption	18,167	16,858	7.8
Food	5,756	5,274	9.1
Housing	5,374	5,217	3.0
Transportation	2,474	2,200	12.4
Clothing	1,514	1,465	3.3
Personal Care	630	556	13.3
Medical Care	1,409	1,234	14.2
Other Family Consumption ^a ..	1,010	912	10.7
Other Costs ^b	868	823	5.5
Taxes	5,367	4,681	14.7
Social Security	1,496	1,371	9.1
Federal Income Tax	3,326	2,811	18.3
State Income Tax	545	499	9.2

^aOther Family Consumption includes reading, recreation, educational supplies, tobacco, alcoholic beverages, and miscellaneous expenses.

^bOther Costs include life insurance premiums, occupational expenses, and gifts and contributions.

Note: Details may not add to totals due to rounding.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University in cosponsorship with Valley National Bank.

area budgets for 1979 and 1980. A breakdown of the major areas into significant subcategories is necessary in order to analyze the budget information and explain the percentage changes that occurred.

Total Family Consumption

The Food category is the major component of the total budget with 23.6 percent allocated to food expenses, which are subdivided into two main areas--food at home and food away from home. Food at home rose 10.7 percent while food away from home, which includes school lunches, rose 6.8 percent. The smaller increase in the latter category, coupled with a reduction in state sales tax on food items from 4 percent to 0 percent as of July 1, 1980 led to an overall increase of only 9.1 percent in food costs.

Housing expenditures also represent a significant portion of the family budget with 22.0 percent allocated to housing costs. The BLS methodology considers that 25 percent of the families are renters and 75 percent are homeowners. Renter costs are comprised of monthly rent for an unfurnished three bedroom apart-

ment or single family dwelling, utility costs, kitchen appliances, and insurance for household contents. Homeowner shelter costs include mortgage and principal for a home purchased eight years ago. (1972 in this year's study), property tax, utilities, repairs, kitchen appliances and household insurance.

Based on a survey of over 1,100 renter dwellings in the Phoenix area an increase in rent of only 1.0 percent occurred between 1979 and 1980. The average rent in this survey was \$406 per month, compared to an average principal and interest payment of \$169 per month on a 1972 mortgage. Utilities rose 5.3 percent and kitchen appliances increased 3.4 percent for renter families. This results in a total increase in renter costs of 1.5 percent.

Principle and interest payments on a home increased only 4.1 percent in the years 1971 to 1972 because mortgage interest costs remained stable following the recession of 1970. The average mortgage interest rate was 7.5 percent in 1971 and 7.25 percent in 1972. Additional 1980 homeowner costs included utilities, which rose 6.7 percent, household insurance, which increased 11.8 percent, and property taxes, which decreased 18.0 percent. Thus despite moderate increases in some housing costs in 1980, the total rise was only 3 percent due to the heavier weighting of items with minimal increases or decreases.

Transportation costs (10.1 percent of the total budget) were characterized by a number of substantial increases. Gasoline prices rose 16.2 percent, tire prices increased 16.9 percent, and public transportation costs jumped 4.0 percent. Total repair costs showed a 7.7 percent increase while total operating expenses rose 12.6 percent. Overall in 1980, automobile maintenance cost the family of four 10.4 percent more than the previous year.

Clothing cost increases for 1980 were a moderate 3.3 percent. This can be attributed in part to the unusual number of preholiday sales in the fourth quarter, the time during which prices were gathered, and to a decrease of 3.3 percent in women's clothing, the category which makes up the largest percent of the total family clothing budget.

Personal care, which includes items such as haircuts, toiletries, and paper goods, usually increases in price substantially each year. These goods increased an average of 13.3 percent in 1980.

Medical care, a category which includes hospital-surgical insurance, medical, dental, and optical services and goods, and prescription and nonprescription drugs, makes up 5.8 percent of the total budget. This

category's increase is primarily due to an increase in hospital-surgical insurance of 24 percent and a 30.7 percent jump in prescription drugs. Increases of almost 10 percent in every other subcategory contributed to the overall rise in medical care.

The last category under Total Family Consumption is Other Family Consumption and includes reading, recreation, educational supplies, tobacco, alcoholic beverages, and miscellaneous expenses. As in 1979 Other Family Consumption comprised 4.1 percent of the total family budget. The total costs in this category increased 10.7 percent.

Other Costs

Other costs is a separate subgroup and is not considered under Total Family Consumption. This category includes life insurance premiums, occupational expenses, and gifts and contributions. Other Costs increased by 5.5 percent in the past year.

Taxes

Total taxes for the urban family include social security, federal income tax, and state income tax. In 1980 social security rates remained at 6.13 percent while the wage base rose to \$25,900. As a result, the family of four paid social security tax on every dollar they made. Federal income taxes were up 18.3 percent over the 1979 figures. This increase occurs because the hypothetical family consistently moves into a higher tax bracket as their income increases. On the other hand state income taxes increased only 9.2 percent due to the 8 percent flat rate on all Arizona adjusted income over \$12,000. An additional state tax deduction for renters in the form of the renter's property tax factor also contributed to keeping state taxes lower.

Figures I through VIII demonstrate the twelve-year trend for the Phoenix area budget categories.

DISTRIBUTION OF EXPENDITURES

Figure IX depicts the percentage of the total budget allocated to each major category. The proportions of most items remained essentially the same as in 1979 with the exception of housing, which dropped from 23.3 percent of the budget in 1979 to 22.0 percent in 1980; and federal taxes, which increased from 20.9 percent of the total budget in 1979 to 22 percent in 1980. Food, housing, and taxes comprise over two-thirds of this hypothetical family's total budget.

FIGURE I
TOTAL BUDGET
(Metropolitan Phoenix)

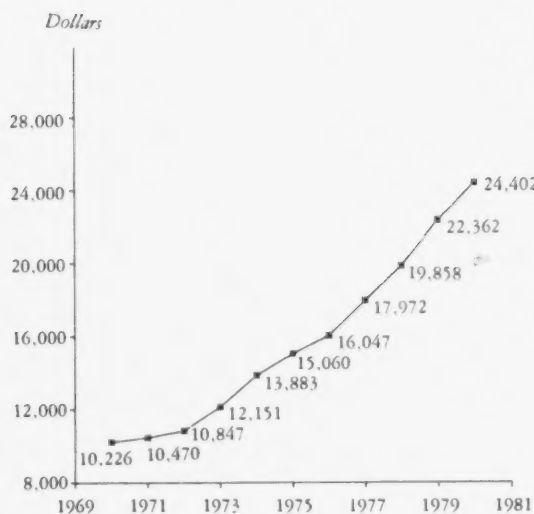


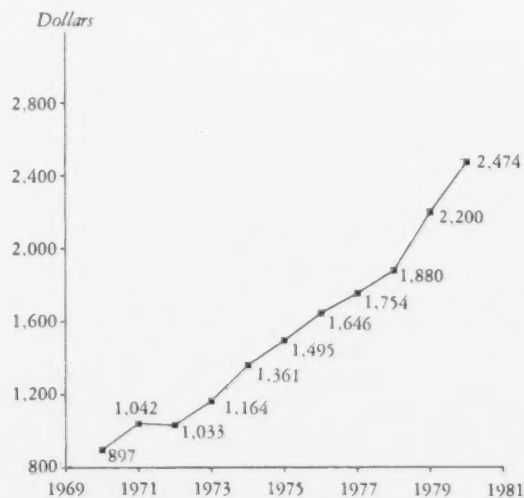
FIGURE II
FOOD
(Metropolitan Phoenix)



FIGURE III
HOUSING
(Metropolitan Phoenix)



FIGURE IV
TRANSPORTATION
(Metropolitan Phoenix)



Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cosponsorship with Valley National Bank.

FIGURE V
CLOTHING AND PERSONAL CARE
(Metropolitan Phoenix)

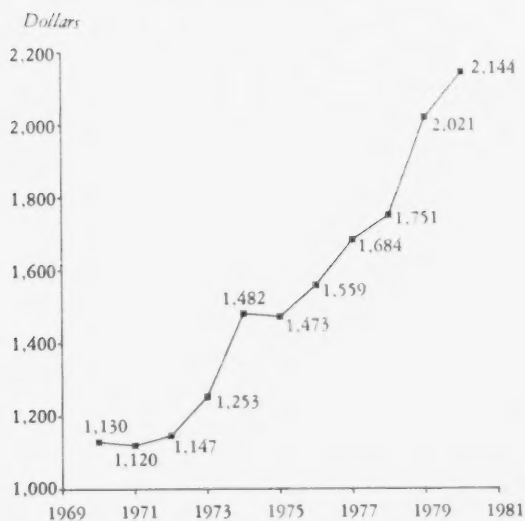


FIGURE VI
MEDICAL CARE
(Metropolitan Phoenix)

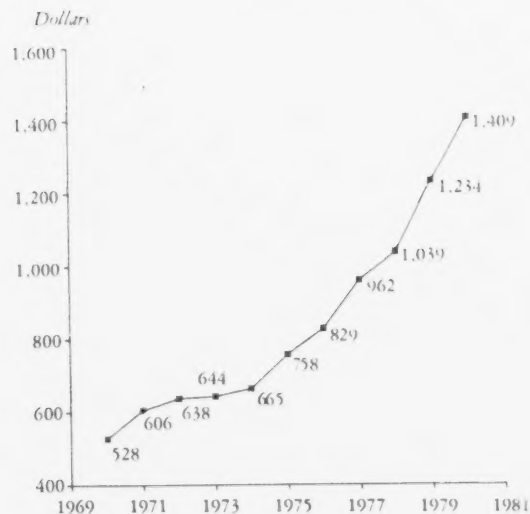


FIGURE VII
OTHER FAMILY CONSUMPTION
Alcoholic Beverages, Tobacco Products,
Reading & Recreation
(Metropolitan Phoenix)

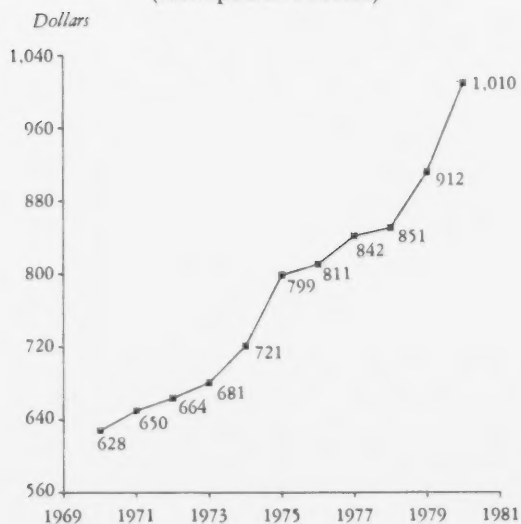
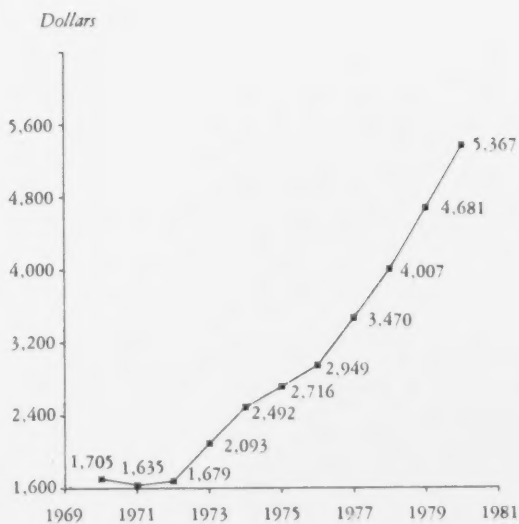
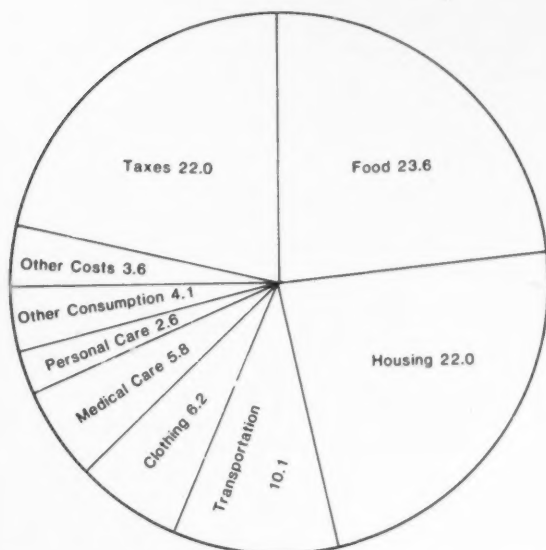


FIGURE VIII
TAXES
(Metropolitan Phoenix)



Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cosponsorship with Valley National Bank.

FIGURE IX
PHOENIX FAMILY OF FOUR BUDGET
Percentage Distribution of Expenditures
(Autumn, 1980)



Source: Bureau of Business and Economic Research, Arizona State University, College of Business Administration, in cosponsorship with Valley National Bank.

COMPARISON WITH TUCSON

Phoenix and Tucson are the two major metropolitan areas in Arizona accounting for three-fourths of the state's population. As mentioned earlier, the Tucson area family of four data can be compared to the Phoenix data due to similarities in methodology. Table 2 provides a comparison of the major areas for the Phoenix and Tucson UFFB. In viewing housing costs it is important to note that Tucson used a 7-year-old mortgage (1973) as compared to Phoenix's 8-year-old mortgage (1972). Overall, the budget for Phoenix is 4 percent higher than that of Tucson. This can be compared with a 5.3 percent higher cost for Phoenix in 1979.

SUMMARY AND FORECAST

The increase in the cost of living for a hypothetical Phoenix family fell from 13.6 percent in 1979 to 9.1

percent in 1980. This increase is substantially less than the increases in the Metropolitan Phoenix Consumer Price Index (CPI) from the fourth quarter of 1979 to the fourth quarter of 1980 (13.3 percent). This difference is largely explained by the differences in methodology in the computation of housing costs in the CPI and the UFFB. The UFFB measures changes in home purchase and mortgage interest costs that were included in the CPI eight years ago. There are, of course, numerous other differences in methodology between the two studies.

Given current predictions for the inflation rate in 1981, the increase in costs of most items of the UFFB will likely be at approximately the same rate in 1981 as in 1980. Homeownership costs in the UFFB, however, will probably increase more rapidly in 1981 because mortgage costs increased more rapidly in 1973 than in 1972, the year of the home purchase.

TABLE 2
COMPARISON OF FAMILY BUDGETS:
PHOENIX AND TUCSON, 1980

	(Urban Family of Four)	
	Phoenix	Tucson
Total Budget	\$24,402	\$23,462
Total Family Consumption	18,167	17,693
Food	5,756	5,322
Housing	5,374	5,661
Transportation	2,474	2,302
Clothing	1,514	1,559
Personal Care	630	547
Medical Care	1,409	1,246
Other Family Consumption ^a ..	1,010	1,056
Other Costs ^b	868	852
Taxes	5,367	4,917
Social Security	1,496	1,438
Federal Income Tax	3,326	2,988
State Income Tax	545	491

^aOther Family Consumption includes reading, recreation, educational supplies, tobacco, alcoholic beverages and miscellaneous expenses.

^bOther Costs include life insurance premiums, occupational expenses, and gifts and contributions.

Source: Phoenix data compiled by the Bureau of Business and Economic Research at Arizona State University in cosponsorship with Valley National Bank. Tucson data compiled by the University of Arizona's Division of Economic and Business Research in cosponsorship with Valley National Bank.

The Arizona Business Scene



Consumer Prices in Arizona: A History and Comparison to the Nation

The Consumer Price Index (CPI) measures price changes in a sample of items that represent nearly all items purchased by the typical consumer. In the Metropolitan Phoenix CPI, prices are currently collected on 1,523 items, which comprise the All Items index, from which the inflation rate is derived.

These 1,523 items are subdivided into seven major groups: Food and Beverages; Housing; Apparel and Upkeep; Transportation; Medical Care; Entertainment; Other Goods and Services. The weights of these seven groups add to 100 percent, as shown in Table 1. These groups are subdivided into a number of categories. *Food*, for example, is subdivided into Food at Home and Food Away from Home. These categories are then

further subdivided into subcategories, such as Cereals and Bakery Products, which are comprised of the individual items.

A history of the rates of inflation in Phoenix and in the United States as a whole is presented in Table 2. Since the late 1960s, the rate of inflation has been increasing in both Phoenix and the United States, although it follows a cyclical pattern that is tied to the national economy. The inflation rate generally peaks at the beginning of a recession, as in 1970, 1974, and

TABLE 1

WEIGHTS OF MAJOR CPI GROUPS, METROPOLITAN PHOENIX

Group	Percent
Food and Beverages	17.4
Housing	46.3
Apparel and Upkeep	5.3
Transportation	17.7
Medical Care	5.4
Entertainment	4.3
Other Goods and Services	3.6
Total	100.0

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

TABLE 2

RATES OF INFLATION 1970-1980 CONSUMER PRICE INDEX, ALL ITEMS (Percentage Increase, Measured from Year-end to Year-end)

Year	Metropolitan Phoenix	United States
1970	4.2	5.5
1971	5.2	3.4
1972	2.3	3.4
1973	7.8	8.8
1974	8.2	12.2
1975	8.4	7.0
1976	4.0	4.8
1977	8.6	6.8
1978	11.5	9.0
1979	15.8	13.3
1980	13.3	12.4

Source: Phoenix: Bureau of Business and Economic Research, College of Business Administration, Arizona State University. United States: U.S. Department of Labor, Bureau of Labor Statistics.

again in early 1980. The rate of inflation then generally drops until about one to two years after the end of the recession, as in 1971-1972 and 1976.

As can be seen from Table 2, the rate of inflation in Phoenix does not follow this pattern perfectly, as the inflation rate in Phoenix has been sometimes higher and sometimes lower than the national rate. Although the rate of increase in Phoenix has been higher than the national average for the last four years, the reverse relationship was true in five of the previous seven years. It should be noted that the CPI is *not* a cost of living index, although it is commonly mislabeled as such. It cannot be used to compare *prices* in different areas but can only be used to compare *changes* in prices.

Housing is the most important of the seven major groups of the CPI with a weight of 46.3 percent, meaning that the average consumer uses 46.3 percent of his expenditures, net of taxes, on housing-related costs. Housing costs were discussed in the April, 1981, "Arizona Business Scene."

The next most important group of the CPI is *Transportation*, accounting for 17.7 percent of the CPI. *Transportation* costs consist of two subgroups, private transportation (expenses relating primarily to automobiles) and public transportation (such as airline fares and bus fares). The inflation in various transportation costs in Phoenix and across the United States, for both 1980 and the entire period from 1969 through 1980, is included in Table 3. Transportation costs have increased more rapidly in Phoenix than the national average since 1969, the first year of the Metropolitan Phoenix CPI (148.4 percent compared to 126.6 percent). This increase has been somewhat more rapid than that of the overall CPI. Gasoline prices have been the major contributor to the inflation in private transportation in recent years, jumping 78 percent in Phoenix in the last two years, which is comparable to the national increase. In contrast, the increase in auto prices has been less than that of most items of the CPI since 1969. While new car prices have increased more in Phoenix than in the nation during the past two years, used car prices in Phoenix have decreased over that time.

Public transportation costs have increased rapidly in Phoenix in recent years. Since 1969, these increases have been greater than both the national average for public transportation and the All Items Metropolitan Phoenix inflation rate. Airline fares in particular have risen rapidly in the last two years — by 71 percent in Phoenix and 73 percent across the nation.

The next most important major group of the CPI is *Food*, with a weight of 17.4 percent of the CPI. Includ-

ed in this group are both Food at Home costs (grocery items) and Food Away from Home costs (restaurant items). Food costs in Phoenix compare favorably to the United States average over the last eleven years, with the increase in Phoenix slightly less than the overall rate of inflation. The grocery items that have increased the most in these eleven years have been those in the Other Foods group: sugar and sweets, fats and oils, nonalcoholic beverages, and other prepared foods. The slowest price rises have been in dairy products.

The four other major categories of the CPI have weights much less than those of the groups already discussed. *Medical Care* expenses, comprising 5.4 percent of the Metropolitan Phoenix CPI, have increased at a much more rapid rate than the national average since 1969, the largest boost of any of the seven major groups. Much of this increase occurred in 1970 and 1971, as illustrated in Table 4. *Medical Care* consists of drugs (prescription and nonprescription), professional (physician and dental) services, and other expenses, including hospital services and health insurance. One of the major contributors to the increase in medical care costs is the cost of a hospital room, which has approximately quadrupled in price in the last eleven years.

Apparel and Upkeep has a weight of 5.3 percent in the Metropolitan Phoenix CPI. This group has had the smallest increase of any major group of the CPI since 1969, both in Phoenix and across the country.

Entertainment expenditures comprise 4.3 percent of the local CPI. Price increases in this group have been less than the All Items inflation rate since 1969, both in Phoenix and in the rest of the nation. The increase of 20.6 percent in Phoenix in 1980 was partially offset by the modest 2.8 percent rise in 1979.

Other Goods and Services, including personal care, make up the last 3.6 percent of the local CPI. Increases in these items in Phoenix have been greater than the national increases, although these price rises have been less than those of the overall CPI.

Price increases in most items of the Metropolitan Phoenix CPI have shown an inconsistent pattern over the years, as large increases in one year are typically offset by small increases or decreases in other years. The groups with the largest increases since 1969 include *Medical Care*, due largely to hospital related expenses; *Transportation*, reflecting increases in gasoline prices and the cost of public transportation; and *Homeownership* costs, mainly due to the increase in mortgage interest. Several groups of items have increased at relatively slow rates: *Apparel and Upkeep*, residential rent, and household furnishings and operations. The

TABLE 3
COMPARISON OF METROPOLITAN PHOENIX AND UNITED STATES
RATES OF INFLATION

(Measured from Year-end to Year-end)

Group	Percent Change 1980		Percent Change 1969-1980	
	Phoenix	U.S.	Phoenix	U.S.
ALL ITEMS	13.3	12.4	134.0	124.3
Food	12.4	10.1	125.0	141.1
Food at Home	11.1	10.6	135.7	142.6
Cereals and Bakery Products	10.5	11.6	127.4	137.8
Meats, Poultry, Fish and Eggs	9.5	8.6	133.5	135.2
Dairy Products	8.9	9.7	110.2	114.0
Fruits and Vegetables	12.5	11.0	131.2	160.0
Other Foods at Home	12.8	12.9	159.7	176.4
Food Away from Home	15.6	9.6	103.4	136.3
Apparel and Upkeep	3.0	6.8	74.5	57.7
Men's and Boys' Apparel	3.6	5.4	50.6	48.2
Women's and Girls' Apparel	(3.6)	1.8	59.4	33.5
Footwear	(4.4)	6.7	101.4	68.8
Apparel Services	18.7	12.4	N/A	N/A
Transportation	13.1	14.7	148.4	126.6
Private Transportation	12.2	14.0	145.4	122.9
New Cars	16.8	7.5	N/A	56.5
Used Cars	(5.1)	18.3	N/A	109.7
Gasoline	20.0	18.9	N/A	247.3
Vehicle Maintenance and Repairs	13.9	10.9	N/A	N/A
Vehicle Insurance	19.8	7.3	N/A	N/A
Public Transportation	28.4	25.6	199.6	119.9
Airline Fare	29.7	33.4	N/A	N/A
Medical Care	11.3	10.0	217.3	132.7
Professional Services	11.9	10.9	N/A	N/A
Hospital and Other Medical Services	22.5	14.5	N/A	N/A
Health Insurance	7.7	N/A	N/A	N/A
Entertainment	20.6	9.6	102.2	90.1
Sporting Goods and Equipment	15.3	9.5	N/A	N/A
Toys, Hobbies	17.1	10.2	N/A	N/A
Admissions and Fees	28.6	8.7	N/A	N/A
Other Goods and Services	11.9	10.1	126.2	96.7
Personal Care	11.8	8.8	122.2	96.9

Notes: Housing items were discussed in a previous "Arizona Business Scene." This table is not inclusive of all subcategories within each group.

N/A — Not Available.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University in cosponsorship with Valley National Bank; U.S. Department of Labor, Bureau of Labor Statistics, from selected issues of *CPI Detailed Report*.

TABLE 4
 RATES OF INFLATION, 1970-1980
 METROPOLITAN PHOENIX CONSUMER PRICE INDEX

Year	Food	Housing	Apparel and upkeep	Transportation	Medical Care	Entertainment	Personal Care
1970	2.3	1.2	5.6	3.6	33.2	(1.3)	9.1
1971	1.1	2.7	(0.8)	16.6	16.8	14.9	(2.8)
1972	5.2	0.9	1.9	(0.7)	5.5	1.0	4.2
1973	16.2	5.8	7.2	12.5	0.7	0.7	8.7
1974	9.7	9.5	8.1	4.7	3.5	9.0	15.4
1975	8.9	9.6	4.9	4.6	15.3	5.1	2.9
1976	(0.6)	5.2	5.6	6.5	9.2	5.4	7.2
1977	10.1	7.7	8.1	8.3	7.0	6.2	7.9
1978	11.3	11.5	7.7	9.6	8.8	10.4	11.2
1979	8.9	19.2	7.4	11.9	11.4	2.8	10.2
1980	12.4	14.4	3.0	13.1	11.3	20.6	11.8

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

current prices of these goods and services are less than double the 1969 prices, whereas most current prices are at least two and a third times the 1969 prices.

Price changes in Phoenix have been considerably different from those across the rest of the nation for certain items. Phoenix has had a slower rate of increase in fuel and utility costs, restaurant expenses, and certain grocery costs. Phoenix, however, has had a faster rate of increase in transportation expenses, particularly public transportation, in medical care, and in personal care and other goods and services.

The inflation rate in the spring of 1981 was somewhat less than the peak inflation rate of early 1980. Inflation generally does decrease after a recession, usually not reaching its lowest rate until one or two years after the end of a recession. If this behavior continues in the current economic cycle, the inflation rate

will continue to drop until sometime in early 1982. History suggests that the level would drop to as low as 6 to 8 percent in early 1982, though most economic forecasters today do not believe this will be the case. The Metropolitan Phoenix inflation rate is still slightly higher than the national average, but this relationship is not inherent and may change.

After more than a decade of increasing inflation rates, the 1980s have begun with a new government administration and, perhaps, a new public attitude. The inflation rate of the 1980s will be largely dependent upon these two factors, though inflation depends upon the interaction of a multitude of factors. The inflation rate by the middle 1980s could vary from as low as the 4 percent predicted by the administration to as high as 18 percent, which would occur if the trend of the 1970s continues into the 1980s.

A Survey of Arizona Business Conditions

HAROLD FEARON

The Arizona economy continued to register cautious advances again in April, according to results from the monthly business survey of the Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona. All indicators, with the exception of purchased materials inventory levels, were up, although the rates of increase were small. The price indicator increased again, but at the lowest increase rate in any of the past eight months, showing that the efforts to reduce inflation are now having some effect, which is an encouraging sign for the future well-being of the economy.

The purchasing business survey now is in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Prices paid for major purchased items continued their upward rise in April, but the rate of increase

moderated again, for the fourth month in a row, and was the lowest monthly increase since last August. Forty-nine percent of the purchasing managers said their firm paid higher prices in April compared to March; 47 percent saw prices unchanged; while 4 percent enjoyed an overall price decrease. The rates of price increase so far in 1981 have been well under almost all months of the previous two years, which indicates we are having some success in the battle against inflation and should provide a sounder base for future economic advances. Obviously, we still have a long way to go, but we are moving in the right direction.

Delivery time on shipments from vendors continued to stretch out, at a rate consistent with the previous month. Longer delivery times were reported by 26 percent of the firms; 12 percent got faster vendor service. The moderate increases shown by this indicator give further evidence that the economy is operating well below its potential capacity.

Inventory levels of purchased materials dropped again for the third month in a row, although the decreases have been relatively minor. Thirty-two percent of the firms cut stocks, while only 22 percent added to inventory. Arizona firms are keeping a tight rein on inventories, which is a good sign for continuation and intensification of economic growth down the road.

New orders received from customers went up again in April for the fourth consecutive month, although at a smaller rate than in March. Thirty-three percent said their firm booked more new business in April than in March, compared to the 25 percent who saw their orders

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shrink. The new order indicator has shown an increase in all but one of the past nine months, and while the increases have been relatively small, steady progress is evident.

Production followed the same upward trend as shown by new order receipts. Production was up in 27 percent of the firms; 18 percent reduced operating rates. This increase was smaller than that reported in March, but rising output rates have occurred in all but two of the past nine months.

Employment of Arizona firms was up in April, reversing the slight dip of the previous month. Twenty-two percent of the firms added to their work force compared to 16 percent who pared payrolls. Employment has seen only marginal growth so far this year, but it is slowly moving up.

While the four months of 1981 have not seen the economic growth that Arizonans have come to expect, the economy has been moving cautiously in an upward direction, and the rate of price hikes is slowing. The next several months likely will see a continuation of

moderate growth as the economy positions itself for more dramatic growth performance.

The results of the April purchasing survey are shown in Table 1.

TABLE 1
APRIL PURCHASING SURVEY

Key Indicators	Percent of Purchasing Managers Indicating Each Response (April compared to March)		
	Higher	Same	Lower
Prices paid for major commodities	49	47	4
Delivery time from vendors	26	62	12
Purchased materials inventory level	22	46	32
New orders received	33	42	25
Production	27	55	18
Employment	22	62	16

Source: Purchasing Management Association of Arizona and Purchasing Management Association of Southern Arizona.

ARIZONA SALES OF ELECTRICAL POWER By Month in Millions of KWH*

Current Month:	Actual:		Percent Change Current Month From:	
	1981	1980	Same Month/ Previous Year	Previous Month
March	2413.9	2203.6	+ 9.5	+ 11.8

* Based on reports from major suppliers.

Arizona New Housing Starts: Monthly Report

FEBRUARY, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
APACHE CO.	8	2	—	—	—	10
Eagar	3	—	—	—	—	3
St. Johns	—	2	—	—	—	2
Springerville	1	—	—	—	—	1
Unincorporated	4	—	—	—	—	4
COCHISE CO.	31	38	1	—	—	71
Benson	3	3	—	—	—	6
Bisbee	—	—	—	—	—	—
Douglas	1	—	—	—	—	1
Huachuca City	—	—	—	—	—	—
Sierra Vista	8	4	—	—	—	12
Tombstone	—	1	1	—	—	3
Unincorporated	19	30	—	—	—	49
Willcox	—	—	—	—	—	—
COCONINO CO.	33	28	—	—	—	61
Flagstaff	18	—	—	—	—	18
Fredonia	—	1	—	—	—	1
Page	3	10	—	—	—	13
Unincorporated	12	17	—	—	—	29
Williams	—	—	—	—	—	—
GILA CO.	44	11	3	—	—	61
Globe	2	—	—	—	—	2
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	15	3	3	—	—	24
Unincorporated	27	8	—	—	—	35
GRAHAM CO.	10	14	—	—	—	24
Pima	—	—	—	—	—	—
Safford	5	—	—	—	—	5
Thatcher	—	4	—	—	—	4
Unincorporated	5	10	—	—	—	15
GREENLEE CO.	—	—	—	—	—	—
Clifton	—	—	—	—	—	—
Duncan	—	—	—	—	—	—
Unincorporated	—	—	—	—	—	—
MARICOPA CO.	1,338	213	12	11	35	2,194
Avondale	—	2	—	—	—	2
Buckeye	2	1	—	—	—	3
Chandler	151	—	—	4	—	167
El Mirage	—	—	—	—	—	—
Gila Bend	1	—	—	—	—	1
Gilbert	8	2	—	—	—	10
Glendale	83	—	—	—	8	133
Goodyear	—	—	—	—	—	—
Guadalupe	—	1	—	—	—	1
Mesa	201	—	4	1	4	476
Paradise Valley	8	—	—	—	—	8
Peoria	41	—	—	—	—	41
Phoenix	503	27	7	3	17	757
Scottsdale	75	—	—	—	—	75
Surprise	—	—	—	—	—	—
Tempe	60	—	—	2	5	124
Tolleson	—	—	—	—	—	—
Unincorporated	204	180	1	1	1	395
Wickenburg	1	—	—	—	—	1
Youngtown	—	—	—	—	—	—

N/R: No report.

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
MOHAVE CO.	65	96	—	—	—	178
Kingman City	9	1	—	—	—	10
Kingman Area	10	25	—	—	2	52
Lake Havasu City	26	3	—	—	—	29
Lake Havasu Area	—	7	—	—	—	7
Mohave Valley N.	10	30	—	—	—	40
Mohave Valley S.	7	20	—	—	—	27
Dolan Springs	1	6	—	—	—	7
Sacramento Val.	1	3	—	—	—	4
Mohave General	1	1	—	—	—	2
NAVAJO CO.	33	16	—	—	—	49
Holbrook	1	—	—	—	—	1
Show Low	2	2	—	—	—	4
Snowflake	5	—	—	—	—	5
Taylor	1	5	—	—	—	6
Unincorporated	22	9	—	—	—	31
Winslow	2	—	—	—	—	2
PIMA CO.	271	216	6	2	9	1,133
Marana	1	2	—	—	—	3
Oro Valley	1	—	—	—	—	1
South Tucson	—	—	—	—	—	—
Tucson	59	49	6	2	8	498
Unincorporated	210	165	—	—	1	631
PINAL CO.	42	75	—	4	—	133
Apache Junc.	14	23	—	1	—	41
Casa Grande	N/R	N/R	N/R	N/R	N/R	N/R
Coolidge	—	3	—	—	—	3
Eloy	—	—	—	—	—	—
Florence	—	—	—	—	—	—
Kearny	—	—	—	—	—	—
Mammoth	—	3	—	—	—	3
Superior	—	—	—	—	—	—
Unincorporated	28	46	—	3	—	86
SANTA CRUZ CO.	4	—	—	—	—	4
Nogales	N/R	N/R	N/R	N/R	N/R	N/R
Patagonia	—	—	—	—	—	—
Unincorporated	4	—	—	—	—	4
YAVAPAI CO.	108	45	4	4	1	348
Chino Valley	4	4	—	—	—	8
Clarkdale	1	—	—	—	—	1
Cottonwood	6	2	—	—	—	8
Jerome	—	—	—	—	—	—
Prescott	13	—	2	2	—	25
Prescott Valley	15	7	1	—	—	24
Unincorporated	69	32	1	2	1	282
YUMA CO.	22	—	—	3	1	38
Parker	—	—	—	—	—	—
Somerton	2	—	—	—	—	2
Unincorporated	8	—	—	—	1	14
Wellton	—	—	—	—	—	—
Yuma	12	—	—	3	—	22
Total, Maricopa Co., March 1981	1,338	213	12	11	35	2,194
Total, Maricopa Co., March 1980	825	179	7	13	11	1,276
Percent Change	62	18	71	-15	218	71
Total, Arizona, March 1981	2,009	754	26	24	48	4,304
Total, Arizona, March 1980	1,579	686	13	22	16	2,642
Percent Change	27	9	100	9	200	62

MARCH, 1981

Arizona Building Permits: Monthly Report

	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE CO.	11	215,500	—	—	—	—	—	—	11	215,500
Eagar	3	155,000	—	—	—	—	—	—	3	155,000
St. Johns	3	N/C	—	—	—	—	—	—	3	N/C
Springerville	1	N/C	—	—	—	—	—	—	1	N/C
Unincorporated	4	60,500	—	—	—	—	—	—	4	60,500
COCHISE CO.	119	2,188,612	5	161,824	1	2,000	85	222,758	210	2,575,194
Benson	9	136,000	—	—	—	—	3	3,150	12	139,150
Bisbee	5	17,550	—	—	—	—	—	—	5	17,550
Douglas	11	99,538	1	31,824	—	—	12	45,722	24	177,084
Huachuca City	5	8,500	—	—	1	2,000	—	—	6	10,500
Sierra Vista	25	441,589	—	—	—	—	55	102,888	80	544,477
Tombstone	7	40,450	—	—	—	—	—	—	7	40,450
Unincorporated	54	1,440,185	4	130,000	—	—	11	70,348	69	1,640,533
Willcox	3	4,800	—	—	—	—	4	650	7	5,450
COCONINO CO.	93	1,891,943	3	52,000	—	—	25	116,246	121	2,060,189
Flagstaff	31	1,104,384	3	52,000	—	—	12	63,419	46	1,219,803
Fredonia	1	N/C	—	—	—	—	2	500	3	500
Page	14	215,293	—	—	—	—	3	7,200	17	222,493
Unincorporated	45	570,948	—	—	—	—	3	38,677	48	609,625
Williams	2	1,318	—	—	—	—	5	6,450	7	7,768
GILA CO.	94	1,328,709	3	118,000	—	—	24	61,703	121	1,508,412
Globe	6	26,400	—	—	—	—	8	20,700	14	47,100
Hayden	—	—	—	—	—	—	2	700	2	700
Miami	7	20,400	—	—	—	—	—	—	7	20,400
Payson	27	358,859	—	—	—	—	9	1,703	36	360,562
Unincorporated	54	923,050	3	118,000	—	—	5	38,600	62	1,079,650
GRAHAM CO.	47	608,587	3	80,000	—	—	3	26,000	53	714,587
Pima	—	—	—	—	—	—	—	—	—	—
Safford	15	181,450	2	10,000	—	—	—	—	17	191,450
Thatcher	9	74,000	—	—	—	—	2	23,000	11	97,000
Unincorporated	23	353,137	1	70,000	—	—	1	3,000	25	426,137
GREENLEE CO.	—	—	—	—	—	—	—	—	—	—
Clifton	—	—	—	—	—	—	—	—	—	—
Duncan	—	—	—	—	—	—	—	—	—	—
Unincorporated	—	—	—	—	—	—	—	—	—	—
MARICOPA CO.	2,438	65,312,505	113	39,170,829	41	12,912,912	2,053	30,376,849	4,645	147,773,095
Avondale	2	25,200	—	—	—	—	15	79,094	17	104,294
Buckeye	5	51,174	1	10,000	—	—	—	—	6	61,174
Chandler	179	4,791,430	6	627,320	3	392,000	220	1,279,731	408	7,090,481
El Mirage	4	75	—	—	—	—	1	164	5	239
Gila Bend	2	73,400	—	—	—	—	—	—	2	73,400
Gilbert	24	394,335	—	—	—	—	11	26,239	35	420,574
Glendale	106	2,833,180	17	1,338,500	1	55,000	243	1,598,945	367	5,825,625
Goodyear	3	5,450	—	—	—	—	12	30,820	15	36,270
Guadalupe	1	—	1	—	—	—	1	—	3	—
Mesa	248	8,260,885	15	15,568,856	5	4,507,350	340	3,449,926	608	31,787,017
Paradise Valley	27	1,423,530	—	—	—	—	28	220,466	55	1,643,996
Peoria	51	962,938	1	110,772	—	—	64	112,696	116	1,186,406
Phoenix	868	27,005,518	42	17,183,010	20	5,254,662	658	7,319,824	1,588	56,763,014
Scottsdale	116	5,540,771	4	1,769,771	—	—	183	1,107,774	303	8,418,316
Surprise	6	3,925	—	—	—	—	3	46,500	9	50,425
Tempe	109	3,400,300	22	1,767,600	12	2,703,900	55	970,000	198	8,841,800
Tolleson	5	5,750	1	20,000	—	—	2	55	8	25,805
Unincorporated	659	10,450,380	3	775,000	—	—	216	14,128,615	878	25,353,995
Wickenburg	1	72,000	—	—	—	—	—	—	1	72,000
Youngtown	22	12,264	—	—	—	—	1	6,000	23	18,264

MARCH, 1981

Arizona Building Permits: Monthly Report (Continued)

	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE CO.	286	3,991,904	22	1,353,686	—	—	233	370,257	541	5,715,847
Kingman City	23	349,794	7	352,240	—	—	5	2,639	35	704,673
Kingman Area	55	625,966	3	324,480	—	—	43	41,169	101	991,615
Lake Havasu City	39	1,143,960	5	394,054	—	—	22	125,695	66	1,663,709
Lake Havasu Area	10	106,854	—	—	—	—	8	13,624	18	120,478
Mohave Valley N.	75	805,308	4	83,904	—	—	94	101,219	173	990,431
Mohave Valley S.	55	679,619	2	192,096	—	—	44	69,198	101	940,913
Dolan Springs	18	131,439	—	—	—	—	10	10,441	28	141,880
Sacramento Valley	6	70,996	1	6,912	—	—	6	5,216	13	83,124
Mohave Co. General	5	77,968	—	—	—	—	1	1,056	6	79,024
NAVAJO CO.	81	1,328,831	4	98,064	—	—	6	32,940	91	1,459,835
Holbrook	1	32,000	—	—	—	—	—	—	1	32,000
Show Low	4	78,021	1	4,000	—	—	—	—	5	82,021
Snowflake	5	N/C	—	—	—	—	—	—	5	N/C
Taylor	7	62,000	1	30,000	—	—	1	7,000	9	99,000
Unincorporated	59	986,310	2	64,064	—	—	4	25,940	65	1,076,314
Winslow	5	170,500	—	—	—	—	1	—	6	170,500
PIMA CO.	802	16,477,958	47	91,748,441	1	68,000	535	4,339,956	1,385	112,634,355
Marana	4	N/C	1	N/C	—	—	—	—	5	N/C
Oro Valley	2	159,000	—	—	—	—	—	—	2	159,000
South Tucson	12	25,000	1	31,936	—	—	6	2,500	19	59,436
Tucson	281	3,717,356	21	10,584,505	1	68,000	259	2,944,376	562	17,314,237
Unincorporated	503	12,576,602	24	81,132,000	—	—	270	1,393,080	797	95,101,682
PINAL CO.	163	2,180,066	8	470,630	—	—	85	175,038	256	2,825,734
Apache Jct.	51	874,088	1	119,843	—	—	38	67,956	90	1,061,887
Casa Grande	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Coolidge	9	32,136	1	65,000	—	—	1	5,900	11	103,036
Eloy	6	5,593	1	120,000	—	—	—	—	7	125,593
Florence	1	500	2	787	—	—	1	8,000	4	9,287
Kearny	—	—	—	—	—	—	—	—	—	—
Mammoth	3	N/C	—	—	—	—	—	—	3	N/C
Superior	1	800	—	—	—	—	5	1,736	6	2,536
Unincorporated	92	1,266,949	3	165,000	—	—	40	91,446	135	1,523,395
SANTA CRUZ CO.	7	399,909	2	24,000	—	—	2	4,535	11	428,444
Nogales	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Patagonia	1	425	—	—	—	—	—	—	1	425
Unincorporated	6	399,484	2	24,000	—	—	2	4,535	10	428,019
YAVAPAI CO.	240	5,631,099	16	8,302,260	1	40,000	100	345,199	357	14,318,558
Chino Valley	13	146,475	2	22,300	—	—	—	—	15	168,775
Clarkdale	5	48,050	—	—	—	—	—	—	5	48,050
Cottonwood	24	280,236	3	181,000	1	40,000	7	32,400	35	533,636
Jerome	—	—	—	—	—	—	1	500	1	500
Prescott	40	888,978	4	382,080	—	—	53	159,696	97	1,430,754
Prescott Valley	28	614,828	—	—	—	—	—	—	28	614,828
Unincorporated	130	3,652,532	7	7,716,880	—	—	39	152,603	176	11,522,015
YUMA CO.	82	1,597,707	8	457,965	2	76,110	39	273,803	131	2,405,585
Parker	—	—	—	—	1	44,000	6	35,000	7	79,000
Somerton	3	82,920	—	—	—	—	—	—	3	82,920
Unincorporated	44	791,470	5	294,036	—	—	7	50,155	56	1,135,661
Wellton	—	—	—	—	—	—	1	29,500	1	29,500
Yuma	35	723,317	3	163,929	1	32,110	25	159,148	64	1,078,504
Total Maricopa Co. March, 1981	2,438	65,312,505	113	39,170,829	41	12,912,912	2,053	30,376,849	4,645	147,773,095
Total Maricopa Co. March, 1980	1,848	35,113,070	166	32,207,123	57	9,791,793	2,097	25,122,727	4,168	102,234,713
Percent Change	31	86	-31	21	-28	31	-2	20	11	44
Total Arizona, March, 1981	4,463	103,153,330	234	142,037,699	46	13,099,022	3,190	36,345,284	7,933	294,635,335
Total Arizona, March, 1980	4,380	70,529,753	293	65,719,753	62	12,257,436	2,984	33,040,011	7,719	181,546,953
Percent Change	1	46	-20	116	-25	6	6	10	2	62

N/R: No report.

N/C: Not collected.

*Includes mobile homes

Maricopa County Retail Food Prices

APRIL, 1981

Retail food prices in Maricopa County fell 0.9 percent in April, following a 0.5 percent increase in March. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The April index of 259.2 indicates that shoppers would now have to pay \$25.92 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$23.56 one year ago. The April, 1981 index reflects a 10 percent increase over the April, 1980 value.

The decline in the April index value was the first decline since February, 1980. Reductions were noted in the *Meats, Poultry, Fish, and Eggs* subgroup (-2.8 percent), and *Other Foods* (-1.5 percent). The other three subgroups posted moderate increases. *Dairy Products* rose 1.0 percent, followed by *Fruits and Vegetables* (0.9 percent) and *Cereals and Bakery Products* (0.7 percent).

Lower prices in the categories of meats and poultry contributed to the lower index value for the *Meats, Poultry, Fish, and Eggs* subgroup. Almost all pork prices were down, notably pork chops (-8.2 percent), noncanned ham (-8.0 percent), and bacon (-6.9 percent). Beef prices were also lower. Ground beef (other than canned) dropped 14.5 percent, while steak, other than round and sirloin, fell 6.2 percent. Prices for fresh whole chicken and fresh/frozen chicken parts dipped 2.4 percent. Partially counteracting these declines were rising prices for eggs (8.3 percent) and fresh/frozen fish and shellfish (4.6 percent).

In the *Other Foods* subgroup, abundant supplies of sugar have pushed prices in the sugar/artificial sweeteners category down by 6.6 percent. This is the first decline for sugar/artificial sweeteners since August, 1980. Also falling were prices for carbonated drinks (-6.5 percent) and canned/package soup (-2.4 percent). The most significant increase in the subgroup was posted for the category of nondairy substitutes, imita-

tion milk, and peanut butter (2.3 percent), and was primarily due to the rising cost of peanut butter.

A 2.8 percent price increase for fresh milk (other than whole milk) and cream contributed to an overall gain for the *Dairy Products* subgroup. Although prices for butter and cheese also rose (0.9 percent and 0.8 percent respectively), a drop in prices for ice cream and related products (0.8 percent) partially counteracted these gains.

Mixed price changes occurred in *Fruits and Vegetables*, resulting in a small overall increase for this subgroup. Prices rose 26.9 percent for apples, followed by tomatoes (17.5 percent). Soaring orange juice prices led to the sharp gain in the frozen fruit and fruit juices category (13.5 percent). Offsetting these gains were falling prices in the category of fresh vegetables (-17.6 percent), caused in part by numerous special sale prices for cucumbers and celery. In addition, prices dropped 14.9 percent for oranges.

Although many price changes were posted for the *Cereals and Bakery Products* subgroup, most of the increases were matched by decreases in other categories. Prices for bread (other than white) rose 4.1 percent, followed by fresh sweet rolls, coffee cake, and doughnuts (2.5 percent) and fresh biscuits, rolls, and muffins (2.5 percent). Counteracting these increases was a decline in flour and prepared flour mixes (-2.9 percent) and rice, macaroni, and cornmeal (-1.1 percent).

A comparison of January, 1981 Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a food group in January, 1981 (obtainable for an outlay of \$10.00 at 1967 average prices) were \$25.87 in Maricopa County; \$26.34 in Los Angeles-Long Beach; \$26.90 in San Francisco-Oakland; \$26.72 in Chicago-Northwestern Indiana; and averaged \$26.56 in the United States.

TABLE 1
 INDEX FOR FOOD CONSUMED AT HOME
 Maricopa County, United States, and Selected Metropolitan Areas
 (Average 1967 = 100 percent)

Group	Maricopa County Apr. '81 ^a	Maricopa County Jan. '81 ^b	United States Jan. '81	Los Angeles Long Beach Jan. '81	San Francisco Oakland Jan. '81	Chicago ^c North western Indiana Jan. '81
Food Consumed at Home	259.2	258.7	265.6	263.4	269.0	267.2
Cereals and Bakery Products	250.1	243.5	262.9	263.6	268.8	268.0
Meats, Poultry, Fish, and Eggs	255.4	262.4	255.1	254.8	261.3	261.8
Dairy Products	231.4	226.7	240.1	231.7	233.8	230.3
Fruits and Vegetables	251.8	243.3	257.6	254.0	261.8	257.3
Other Foods Consumed at Home	289.0	290.2	320.5	315.4	330.8	327.3

^aComputed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

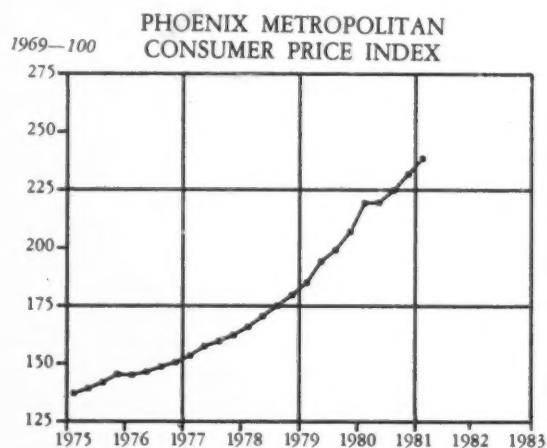
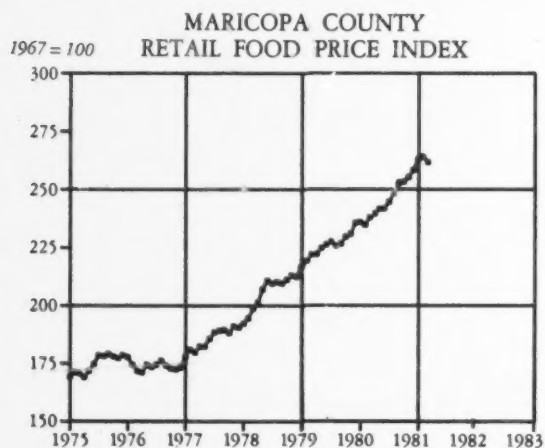
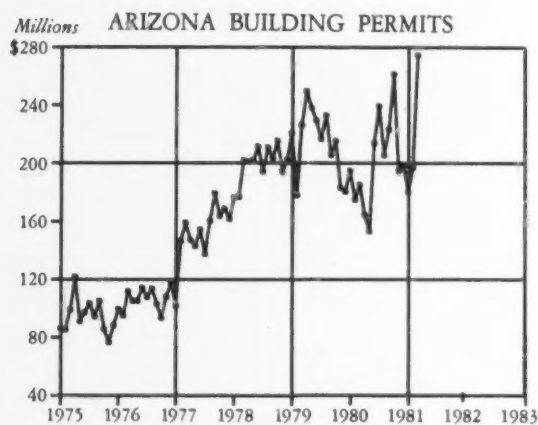
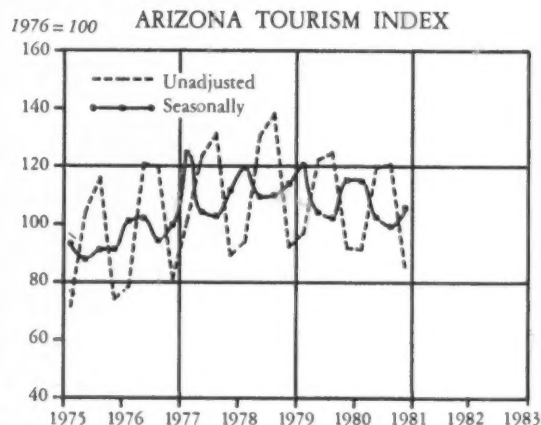
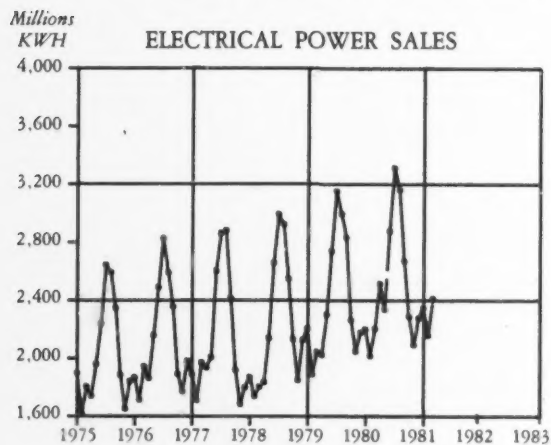
^bMaricopa County food prices are reported for the month closest to publication.

^cComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Arizona Economic Indicators



Source: All data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

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Report To The Reader

No one doubts that the cost of living is rising rapidly. Yet, the measurement of this cost is the object of considerable interest among those who must relate the cost of living to other economic values and measures. This issue of *Arizona Business* contains two articles that deal with this subject.

"Phoenix Cost of Living: A Comparison and Evaluation," by Dr. Robert T. Keim, Faculty Research Associate in the ASU Bureau of Business and Economic Research, discusses the problems of methodology that are involved when one attempts to make comparisons among cities. In this study, Dr. Keim has developed methodology that now allows Phoenix living costs to be compared with living costs in other cities by using the Urban Family of Four Budget, as used by the Bureau of Labor Statistics.

Dr. Keim's study shows that the Phoenix family budget is now \$21,844, ranking the city twenty-second among twenty-five cities. Using this same methodology to trace the budget back to 1969, he also found that the city has held much the same position throughout a twelve-year period. Its lowest rank was eighteenth in 1978, and the highest was twenty-second, which occurred in 1970, 1975, 1976, 1977, and 1980.

A general discussion of cost of living measurement and some conclusions about various cities are found in this month's "Arizona Business Scene." The article discusses four other cost of living studies and shows comparable index ratings of the various cities. In all the studies, the cost of living in Phoenix is generally near or below the national average.

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Factors Influencing Arizona's Birth Rates

SUZANNE DANDOY

Trends in Arizona's birth rate have come under investigation recently as demographers, economists, and reporters try to predict the future of the state's population growth. In a recent article in *Arizona Business*, Happel and Hogan¹ forecasted increasing birth rates for the nation and the state in the 1980s. Such a forecast has definite implications for the Arizona business community and public officials who must plan products, facilities, and services for a changing population. To utilize such forecasts in specific planning decisions, however, the differences in birth rates among Arizona's varied population groups should be examined.

Although Arizona's recorded birth rate (births per 1,000 population) has been higher than that of the United States since 1925, the pattern of increases and decreases has been parallel to the nation.² Yet, within the state, birth rates are not uniform but instead, they

vary by county and by cultural group. In addition, marked changes in birth statistics have occurred recently with respect to family size, and age and marital status of the mother. Each of these factors affects forecasts concerning the number and needs of children in Arizona.

The following discussion focuses on the differences in birth rates among Arizona's counties and suggests factors that contribute to these differences. By incorporating this information into long-range planning and decision-making, providers of goods and services should be better prepared to target their products to appropriate segments of the population.

BIRTHS AND MIGRATION

Increase in any state's population results from two sources: the natural increase represented by a higher number of births than deaths, and the net increase from migration. From 1963 to 1969 the natural increase in Arizona was the more important factor, while in the past twelve years up to two-thirds of the population growth has resulted from persons moving into the state.³ Growth in individual counties has varied, depending on which of these factors, i.e., birth or migration, had a more significant influence during a particular time period.

Births

The long-term trend in recorded birth rates for each county in the past thirty years is presented in Table 1.

Variations in birth rates and migration affect Arizona counties in different ways. Ethnic and racial concentrations, religion, child bearing age, and marital status have all had an impact on the population profiles of individual counties. These variations are important to agencies that must plan for recreation, transportation, health care, social service, and consumer needs.

Suzanne Dandoy is a professor in the Center for Health Services Administration, College of Business Administration, Arizona State University.

TABLE 1

BIRTH RATES* BY COUNTY OF RESIDENCE, ARIZONA, 1950-1980

County	1950	1955	1960	1965	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
United States	23.6	24.6	23.7	19.4	18.4	17.2	15.6	14.9	15.0	14.8	14.7	15.3	15.3	15.8	16.0
ARIZONA	27.4	28.2	28.1	21.3	21.2	20.6	19.1	18.3	18.5	17.8	17.6	17.8	17.4	17.7	18.4
Apache	27.4	34.7	48.6	44.2	42.4	39.1	39.9	34.6	35.2	35.0	36.2	34.6	33.0	31.1	31.3
Cochise	24.3	27.2	30.0	23.9	21.8	23.4	22.1	21.3	20.2	20.3	18.5	19.8	20.0	18.3	18.3
Coconino	32.1	30.3	34.7	29.1	29.1	27.0	24.1	23.9	23.1	22.6	22.1	22.6	21.3	20.1	24.3
Gila	29.7	28.8	28.9	27.0	23.7	23.7	20.3	20.3	21.7	20.5	19.6	20.4	18.5	19.8	19.0
Graham	29.6	26.4	23.8	21.2	22.4	21.2	22.3	19.7	19.9	21.0	21.2	23.5	20.6	22.0	22.4
Greenlee	34.4	32.5	22.2	16.2	22.5	27.6	20.6	24.6	23.2	25.0	23.4	26.9	22.3	22.3	23.8
Maricopa	26.5	27.0	26.8	19.6	20.3	19.4	17.8	17.3	17.4	16.4	16.2	16.5	16.4	17.2	17.8
Mohave	27.0	20.4	23.8	21.1	18.0	16.5	14.7	14.3	14.7	14.6	15.0	15.3	14.6	14.7	15.7
Navajo	30.4	29.1	38.0	34.7	31.2	28.9	27.2	27.1	26.4	28.1	27.2	27.6	24.1	24.3	28.2
Pima	27.3	28.2	26.8	19.5	19.2	19.0	17.9	16.6	17.2	16.5	16.2	16.6	15.9	15.6	16.8
Pinal	32.6	35.9	31.0	24.7	22.7	22.5	21.1	20.3	20.9	19.5	18.9	18.3	19.4	18.1	20.2
Santa Cruz	26.8	23.5	31.9	21.1	21.3	23.1	21.1	23.2	20.5	20.9	23.2	22.0	23.0	23.5	24.4
Yavapai	19.7	18.0	21.8	15.0	14.7	14.2	14.9	12.6	12.8	12.9	14.8	14.0	13.0	14.5	13.7
Yuma	26.2	35.2	27.6	21.7	22.9	24.0	22.1	21.9	22.4	22.9	24.3	21.8	21.2	22.6	20.0

*Per 1,000 estimated mid-year population.

Source: Vital Records and Information Services, Arizona Department of Health Services.

After a peak in the 1950s, most areas in Arizona had a gradual decrease in birth rates through 1979, but in 1980, they showed an increase. However, the increase in Santa Cruz County began in 1976, four years earlier, and the increase in Maricopa County began in 1979, one year earlier. In contrast, Yuma County has had a marked decrease in birth rates for the past six years, and decreasing rates were recorded for 1980 in two other counties: Gila and Yavapai. Cochise County had no change in its birth rate from 1979 to 1980. Thus, although Arizona experienced an increase in the statewide birth rate in 1980, four individual counties did not reflect this pattern. Anyone wishing to use birth trends to plan for future needs should be aware of the county differences and the contributing factors which are discussed in the following section.

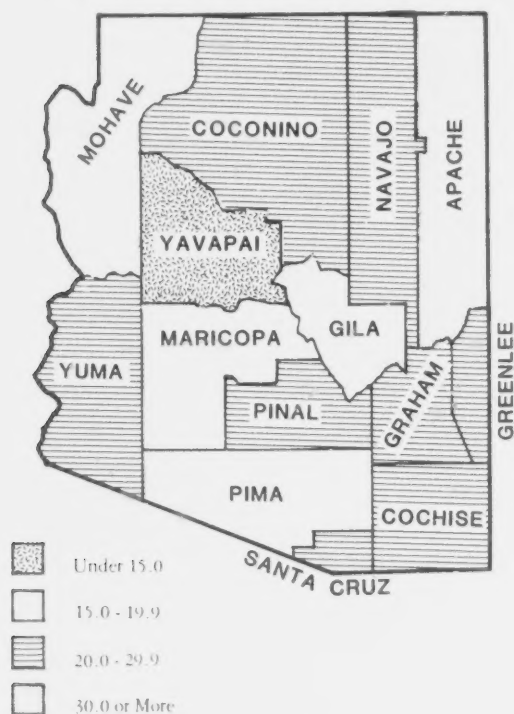
In the past thirty years the magnitude of the birth rate has been as much as three times greater in Apache County, which has the state's highest recorded rate, than in Yavapai County, which has the lowest. Birth rates in the other twelve counties are between these two extremes. The birth rate differences between counties have moderated in recent years as the higher rates among the Indians in Apache, Coconino, and Navajo counties have fallen; yet variations remain due to the

diversity of the populations (Figure 1). The birth rates in nine of the counties remain considerably higher than state or national averages and provide those counties with younger populations and a larger proportion of children. The significance of these differences in birth rates must be judged by decision makers planning for the future of individual communities, particularly in terms of housing, health care, transportation, and community services.

Migration

Just as birth rates have had a varied influence on the population profile of Arizona's fourteen counties, the impact of migration has also not been uniform throughout the state. Contrary to popular belief, the migrants moving to Arizona are not chiefly elderly retirees; instead they are mainly families in the child-bearing and child-rearing age groups. The majority of these younger persons who are moving to Arizona are settling in the metropolitan areas of Coconino, Maricopa, and Pima counties, the areas where economic growth has been greatest. These three counties have each experienced a 52 to 58 percent increase in population in the past ten years. In contrast, Apache and

FIGURE 1
BIRTH RATES* BY
COUNTY OF RESIDENCE, ARIZONA, 1980



* Per 1,000 estimated mid-year population.

Source: Vital Records and Information Services, Arizona Department of Health Services.

Navajo counties, the large population increase (60 and 43 percent, respectively) is due more to births than to migration.

Mohave and Yavapai counties have experienced a heavy influx of older residents. Both counties recorded the largest percentage increases in population from 1970 to 1980 (Mohave, 117 percent; Yavapai, 85 percent); yet, these counties also recorded the highest death rates and lowest birth rates in Arizona. The birth rates have remained below the state and national averages for the past 30 years. Thus, the population growth in these two counties results primarily from immigration of older age persons.

Gila County also has a high death rate among its citizens but this is offset by a high birth rate. The ten-year population increase in that county has been one of

the lowest in the state, indicating a relatively stable population with little natural increase or net migration.

In these three counties (Gila, Mohave, and Yavapai) a significant increase in the birth rate should not be anticipated; growth will come from older age groups who will expand the need for adult services and products. Particular emphasis should be given to recreational needs, health services, and transportation since many of these adults settle in areas at considerable distance from the major towns.

Greenlee is the one county which had a relatively small population growth in the past ten years — only 12 percent. Natural increase due to births was the only significant factor contributing to population expansion in Greenlee County in that time period.

The continually higher birth rates and the immigration of young families to Arizona have resulted in a population with a median age of 28 years compared with the United States median age of 30.2 years.¹ Thus, the state has a young, growing population with an increasing birth rate.

RACIAL AND ETHNIC GROUPS

One of the additional factors which influence the birth rate trends and variations is the presence of diverse cultural groups in the state. Arizona's residents include several ethnic groups that have birth rates considerably higher than the national or state averages. For 1980 the recorded births and birth rates by ethnic group in Arizona are shown in Table 2. In turn, Arizona counties differ noticeably in the racial and ethnic composition of their populations, and the recorded county birth rates reflect these differences.

TABLE 2

BIRTHS AND BIRTH RATES* BY ETHNIC GROUP OF CHILD, ARIZONA, 1980

<i>Ethnic Group of Child</i>	<i>Number</i>	<i>Rate</i>
White (excluding Spanish)	29,226	14.6
Spanish-origin	13,891	31.5
Indian	4,510	27.0
Black	1,880	23.0
Asian	542	22.5
Total	50,049	18.4

* Per 1,000 estimated mid-year population.

Source: Vital Records and Information Services, Arizona Department of Health Services.

Indians

The relatively high birth rate among the Indians is reflected in the rates recorded for Apache, Navajo, and Coconino counties, where Indians constitute, respectively, 75, 51, and 36 percent of the county's population. In Gila County, Indians represented 17 percent of the population and contributed 22 percent of the births recorded in 1980. To a lesser extent Indians affect the high birth rates in Graham and Pinal counties.

Since many of the services for Indians are provided by the federal government, increasing numbers of Indian children do not represent the same demands on the communities as high numbers of non-Indian births. Schooling and health care become a federal responsibility on and near Indian reservations. However, the demands for social services, food, children's clothing, and entertainment may be significantly affected by high birth rates among the Indians.

Blacks and Asians

Because the black population in Arizona is relatively small (3 percent of the state's total residents) and is concentrated chiefly in the two metropolitan areas (83 percent live in Maricopa and Pima counties), the higher birth rate among the blacks does not significantly affect the overall state or county population figures. In 1980 births of black infants represented 3.7 percent of all recorded births in Arizona. Similarly, the 542 newborn Asian children represented only 1.1 percent of all births; 420 of these infants were born in Maricopa and Pima counties.

Spanish-origin Population

Births to the Spanish-origin population have a pronounced effect on the statistics in areas where this ethnic group is concentrated. As seen in Table 3 the Spanish population contributes disproportionately to the birth rate in nine of Arizona's fourteen counties and is the single most significant contributor to the higher rates of births recorded in Santa Cruz and Yuma counties. Nationwide, a similar situation has been reported: 10 percent of the births in 1979 were to Hispanic women; yet they constituted only 6 percent of all women 18 to 44 years old.⁵ In areas that have a large percentage of births occurring in Hispanic families opportunities exist for the community to increase Spanish-language services and to offer products that appeal to this population group.

TABLE 3

PERCENT OF TOTAL POPULATION
AND PERCENT OF BIRTHS, SPANISH-ORIGIN,
BY COUNTY, ARIZONA

County	Percent of Population Spanish-origin	Percent of Births Spanish-origin
	1979	1980
Apache	7.1	5.6
Cochise	37.8	36.2
Coconino	12.9	9.3
Gila	26.8	31.2
Graham	23.9	34.4
Greenlee	50.4	54.0
Maricopa	14.6	25.1
Mohave	6.6	13.8
Navajo	9.8	7.3
Pima	23.8	37.9
Pinal	36.1	45.8
Santa Cruz	77.0	84.8
Yavapai	11.8	10.9
Yuma	25.6	47.1
Total	18.4	27.8

Source: 1979 population percentages from Arizona Department of Economic Security, *Population Estimates of Arizona, as of July 1, 1979*; 1980 birth statistics from Vital Records and Information Services, Arizona Department of Health Services.

RELIGION

Two religious groups have a marked effect on Arizona's birth statistics: the state's approximately 450,000 Catholics and the 140,000 members of the Church of Jesus Christ of Latter-day Saints (Mormons). Both religions encourage large families and discourage the use of artificial means of birth control. Also, both groups cluster in particular locations in the state and, therefore, influence the birth rates in those areas. Since birth certificates do not record parents' religion, it is difficult to determine precise birth rates for these groups. Nevertheless, each of these two religious groups has a social structure, communication mechanisms, and a way of life which are often unique and should be understood and utilized by businesses and agencies hoping to reach these populations.

Catholics

Records from the Phoenix Diocese of the Catholic Church indicate that there were 7,591 infant baptisms and 248,000 persons listed as church members in that diocese in 1980. These figures would give a birth rate of

30.6. The percentage of Catholics in Maricopa County communities varies from 25 to 30 percent.⁶ In Cochise, Greenlee, Pinal, and Santa Cruz counties, Catholics are a much larger component of the population and thus contribute significantly to the birth rates.

Mormons

In attempting to determine the birth rate for Mormons, data from Utah, where Mormons represent 70 percent of the population, are helpful. The 1980 birth rate for Utah was 28.7. In 1978, the latest year for which nationwide comparisons are available, Utah reported the highest rate for any state. The average number of children born to women ever married, ages 15 to 44 years, was 3.9 in Utah compared with the average of 2.1 for the United States.⁷ In the *Foresight Eighty* study from Western Savings,⁸ the city of Mesa, where Mormons account for 16 percent of the population, is reported to have a birth rate of 23.4, compared to 17.5 in Phoenix and 9.8 in Scottsdale. Thus, the Mormon population in Mesa has a direct influence on the birth rate in that community and contributes a need for family-oriented services and products. Other areas where Mormons are a major component of the population are Greenlee County and the nonreservation portions of Apache, Graham, and Navajo counties.

DELAYED CHILD BEARING AND FAMILY SIZE

There has been a steady increase in women of child-bearing age in Arizona in the past ten years. A review of preliminary figures from the 1980 census in Arizona indicates that females from 15 to 44 years of age represented 23.1 percent of the total state population, an increase compared with 20.9 percent in 1970. In numbers this represents an increase from 370,000 to 625,000 women.⁹

Age of Mother

The fertility patterns of the women in this age group have changed and many of them are starting their families at a later age. In the past ten years the percent of births among women 25 to 34 years has increased while the percent of births among women 15 to 24 and among women over 34 years old has decreased (Table 4). The average age of mothers having their first child was 21.1 years in 1970, but advanced to 22.3 years of age in 1980. Thus, we are seeing more women

TABLE 4
PERCENTAGE DISTRIBUTION OF
BIRTHS BY MOTHER'S AGE GROUP,
ARIZONA, 1970 AND 1980

Mother's Age Group	1970	1980
Under 15	0.2	0.3
15 - 19	17.9	16.3
20 - 24	38.1	35.8
25 - 29	25.6	28.9
30 - 34	11.4	13.9
35 - 39	5.0	4.0
40 - 44	1.6	0.8
45 and Over	0.1	0.0
Unknown	0.1	—
Total	100.0	100.0

Source: Vital Records and Information Services, Arizona Department of Health Services.

postpone child-bearing until their late twenties and early thirties and cease child-bearing after age 34.

Number of Children

In addition to being older, the pregnant woman in 1980 was more likely to be having her first or second child. First and second births constituted 71.8 percent of all births in the state in 1980 compared with 63.7 percent of all births in 1970. A somewhat small percentage of last year's births — only 12.9 percent — were to women with three or more children, in contrast with 21.7 percent in 1970. These changes are reflected in the average number of children in the families of mothers giving birth: 2.6 in 1970, 2.1 in 1980. Over ten years the trend has been toward a delay in the age at which women start their families and an earlier curtailment of child-bearing. As a result, women are spending a much shorter period of their lives in a child-bearing role, leaving more time for careers, work outside the home, and personal interests.

Increasing birth rates in women 30 to 34 years of age, especially for first children, was the nationwide trend through 1978, the latest year for which national statistics are available. Both first and second births increased for women 30 to 39 years of age.¹⁰ This trend toward delayed childbearing may be the factor most responsible for the overall increase in Arizona's birth rate in 1980. If women who refrained from having children in 1976-1979 have now started their families,

the birth rate for 1980 would represent only a temporary increase that would stabilize in two or three years.

County Comparisons

As with other birth statistics, family size, as measured by the number of previous births, varies among the counties (Table 5). In Apache, Graham, and Navajo counties, births to women with three or more children still comprise over 25 percent of total births and represent larger average family sizes in the Indian and Mormon populations of these counties.

In Pima, Santa Cruz, and Yavapai counties only 10 percent of all births are to women with three or more children; first and second children represented 75 percent of all births in those counties in 1980. It is surprising that Santa Cruz County, having a population with a high birth rate, is not recording more births to women with three or more children. One explanation could be that women from the Mexican side of the border may deliver their first and second children in Nogales, Arizona, the remainder in Nogales, Sonora.

Geographic differences in family size raise significant questions regarding product demand. Do families with more children invest in more durable children's furniture, toys, and yard equipment so that these items will withstand greater use? Or do the financial needs of

larger families curtail the amount of funds available for such purchases? If more women are working and delaying childbearing, are the families able to afford higher line products and more recreational pursuits for these fewer children? Or will families purchase items which are less durable, knowing the need for such products will be for only one or two children? Answers to such questions should be gathered from marketing experts in order that products can be directed to specific target populations.

MARITAL STATUS

Arizona's marriage rate (the number of marriages in the total population) has decreased over the past eight years. The high was reached in 1973 with 12.6 per 1,000. By 1980 it had decreased to 11.1 per 1,000. In contrast, the marriage rate for the United States has increased steadily since 1976 to a figure of 10.8 in 1980. Thus, Arizona is experiencing an increasing birth rate with a decreasing marriage rate, implying either more children per marriage, fewer remarriages, or more children born to unmarried women. In fact, the percentage of births to unwed mothers has shown a dramatic increase in the state, from 10.8 percent of all births in 1970 to 18.7 percent in 1980, a rate that nearly doubled in ten years. Last year there were 9,373 babies born to unwed parents in Arizona; of particular concern is the

TABLE 5

PREVIOUS LIVE BIRTHS AND AVERAGE NUMBER OF CHILDREN, BY COUNTY, ARIZONA, 1980

County	Total Births		No Previous Births*		One		Two		Three or More		Average Number of Children
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	
Apache	1,627	100.0	523	32.1	415	25.5	267	16.4	422	25.9	2.76
Cochise	1,570	100.0	646	41.1	474	30.2	245	15.6	205	13.0	2.13
Coconino	1,824	100.0	749	41.1	486	26.6	305	16.7	284	15.6	2.26
Gila	705	100.0	261	37.0	211	29.9	126	17.9	107	15.2	2.25
Graham	512	100.0	155	30.3	133	26.0	95	18.6	129	25.2	2.65
Greenlee	272	100.0	86	31.6	89	32.7	54	19.9	43	15.8	2.28
Maricopa	26,769	100.0	11,615	43.4	8,095	30.2	3,939	14.7	3,120	11.7	2.05
Mohave	871	100.0	346	39.7	269	30.9	117	13.4	139	16.0	2.44
Navajo	1,899	100.0	573	30.2	494	26.0	341	18.0	491	25.9	2.76
Pima	8,931	100.0	4,048	45.3	2,707	30.3	1,308	14.6	868	9.7	1.96
Pinal	1,840	100.0	709	38.5	569	30.9	317	17.2	245	13.3	2.19
Santa Cruz	499	100.0	215	43.1	153	30.7	79	15.8	52	10.4	2.01
Yavapai	937	100.0	370	39.5	329	35.1	142	15.2	96	10.2	2.06
Yuma	1,793	100.0	685	38.2	562	31.3	315	17.6	231	12.9	2.20
Total	50,049	100.0	20,981	41.9	14,986	29.9	7,650	15.3	6,432	12.9	2.12

*Births occurring in 1980 to women with no previous births.

Source: Vital Records and Information Services, Arizona Department of Health Services.

high percentage of teenage unwed mothers; 41.2 percent of these births were to mothers age 19 and under. Even ten years ago Arizona's rate of births per 1,000 unmarried women was the highest in a study of white women in thirty-eight reporting states.¹¹

The geographic distribution of unmarried mothers parallels that of the total population. In 1980 over two-thirds of the unwed mothers lived in Maricopa and Pima counties (Table 6). Another 6.6 percent lived in Apache County. Over one-third of all the births in that county (38.3 percent) were births to unwed mothers. The majority of births to unwed mothers in Arizona are among women of Spanish or Indian heritage (Table 7).

In general, the percentage of unwed mothers represents a significant change in family configuration in the state and may indicate an increasing need for services, such as counseling and child day care, for the pregnant teenager and the single parent.

COMPARISON WITH OTHER STATES

Many of the trends observed in Arizona are parallel to those occurring in several other states. In general, the

TABLE 6

PERCENTAGE DISTRIBUTION OF BIRTHS TO UNWED MOTHERS, BY MOTHER'S COUNTY OF RESIDENCE, ARIZONA, 1980

<i>County of Residence</i>	<i>Number</i>	<i>Percent</i>
ARIZONA.....	9,373	100.0
Apache.....	623	6.6
Cochise.....	188	2.0
Coconino.....	454	4.8
Gila.....	146	1.6
Graham.....	72	0.8
Greenlee.....	32	0.3
Maricopa.....	4,785	51.1
Mohave.....	100	1.1
Navajo.....	508	5.4
Pima.....	1,630	17.4
Pinal.....	422	4.5
Santa Cruz.....	72	0.8
Yavapai.....	85	0.9
Yuma.....	256	2.7

Source: Vital Records and Information Services, Arizona Department of Health Services.

TABLE 7

TOTAL BIRTHS, BIRTHS TO UNWED MOTHERS, AND PERCENTAGE DISTRIBUTION, BY ETHNIC GROUP, ARIZONA, 1980

<i>Ethnic Group of Mother</i>	<i>Total Births</i>	<i>Births to Unwed Mothers</i>	<i>Percent</i>
White (excluding Spanish).....	29,226	2,979	10.2
Spanish-origin.....	13,891	3,590	25.8
Indian.....	4,510	1,985	44.0
Black.....	1,880	800	42.6
Asian.....	542	19	3.5
Total.....	50,049	9,373	18.7

Source: Vital Records and Information Services, Arizona Department of Health Services.

western states have recorded higher rates of birth than the national average.¹² In 1978 only eight states had rates higher than Arizona; two (Mississippi and Louisiana) were in the South, six (Alaska, Hawaii, Idaho, New Mexico, Utah and Wyoming) were in the West. Obviously, some similar factors would be in operation in these states: net immigration, specific ethnic groups with high birth rates, and general population increases. The trend seemed to change in 1980, however, when Nevada, New Mexico, and Utah had decreasing birth rates, repeating a pattern noted in the 1970s. Thus, the upturn in the birth rate in Arizona may be unique among states in this area of the country, reflecting the positive influence of an expanding economy.

SUMMARY

The variations in birth rates among Arizona's counties and the factors that contribute to these differences are summarized in Table 8. Although the overall effect of these factors has been to maintain Arizona's birth rate at a level higher than that in the United States, and to produce an increase in the 1980 rate, each county has a unique population picture. In general, Arizona's rapid population growth reflects immigration of families in the child-bearing and child-rearing years and an increasing birth rate among these families. Consideration of the effect of these population changes on future demands and needs for products, services, and facilities must include an understanding of the variations in growth patterns among segments of the state's citizens. The 1980 increase in birth rates occurred in

TABLE 8
BIRTH RATES FOR 1980, INFLUENCING FACTORS,
AND FORECASTS FOR THE FUTURE, BY COUNTY, ARIZONA

<i>County</i>	<i>Birth Rate*</i>	<i>Influencing Factors</i>	<i>Forecast for Future Birth Rates</i>
Apache	31.3	Indians, Mormons, large family size, unwed mothers	Increase
Cochise	18.3	Spanish, Catholics	Stable
Coconino	24.3	Indians, immigration of young families	Increase
Gila	19.0	Indians, Spanish, immigration of older persons, outmigration of younger persons	Decrease
Graham	22.4	Indians, Spanish, Mormons, large family size	Increase
Greenlee	23.8	Spanish, Catholics, Mormons	Stable
Maricopa	17.8	Spanish, Catholics, Mormons, unwed mothers, immigration of young families	Increase
Mohave	15.7	Spanish, immigration of older persons	Stable
Navajo	28.2	Indians, Mormons, large family size	Increase
Pima	16.8	Spanish, immigration of young families, small family size, unwed mothers	Increase
Pinal	20.2	Indians, Spanish, Catholics	Increase
Santa Cruz	24.4	Spanish, Catholics	Increase
Yavapai	13.7	Immigration of older persons, small family size	Stable
Yuma	20.4	Spanish, Catholics	Stable
ARIZONA	18.4	Indians, Spanish, Mormons, Catholics, immigration of young families, increasing percentage of unwed mothers, delayed child-bearing, decreasing marriage rate.	

*Per 1,000 estimated mid-year population.

Source: Birth rates from Vital Records and Information Services, Arizona Department of Health Services. Other information is summarized from the text.

only ten of the state's fourteen counties, indicating that factors influencing the population growth are not uniform and will affect businesses and government agencies in different ways, depending upon the population area or group served. Significant differences between counties due to age, race, and religion of the residents have been discussed.

Business leaders, planners, marketing managers, and development officers need to analyze the communities and markets they hope to reach. Government officials and service agencies should be familiar with the characteristics of the population groups they intend to contact. Understanding the differences between the needs of people in Mohave County and Pima County

can be a valuable tool in designing appropriate strategies to meet those needs. Some factors of particular significance include the higher birth rate of Apache County, the influx of older residents to Mohave and Yavapai counties, the higher birth rate among certain ethnic and religious groups, the trend toward postponement of child-bearing, and the decreasing family size in some counties. This analysis of factors affecting birth rates and population growth in Arizona is aimed at providing data to assist in this process. By incorporating this information into long-range planning and decision making, providers of goods or services should be better prepared to target their products to appropriate segments of the population.

¹S. K. Happel and T. D. Hogan, "Birth Rate Trends: Implications for the Future," *Arizona Business*, 28 (November, 1980): pp. 3-10.

²Data on Arizona births and marriages were obtained from the Bureau of Vital Records and Information Services, Arizona Department of Health Services. Tony DiCampi, Supervisor of the Research and Statistical Analysis Section, provided the statistical tables and information.

³N. deGennaro, ed., *Arizona Statistical Abstract, 1979*, University of Arizona, Tucson, *Population Estimates of Arizona as of July 1, 1979*, Report Number 12, Arizona Department of Economic Security, Phoenix, January, 1981.

⁴Addendum to *Population Estimates of Arizona as of July 1, 1979*, Report Number 12, Arizona Department of Economic Security, Phoenix, June, 1981.

⁵*Fertility of American Women: June, 1979*, U.S. Bureau of the

Census, Current Population Reports, Series P-20, No. 358, U.S. Government Printing Office, Washington, D.C., 1980.

⁶*Foresight Eighty*, Western Savings and Loan Association, Phoenix, 1980.

⁷*Utah Vital Statistics, Annual Report 1978*, Utah Department of Health, Salt Lake City, November, 1980.

⁸*Foresight Eighty*.

⁹Vital Records and Information Services, Arizona Department of Health Services.

¹⁰*Monthly Vital Statistics Report, Advance Report: Final Natality Statistics, 1978*, DHHS Publ. No. (PHS) 80-1120-29 (1 supplement), April 28, 1980.

¹¹E. Spratley, *Birth and Fertility Rates for States and Metropolitan Areas*, Vital and Health Statistics, Series 21, Data from National Vital Statistical System, No. 27, DHEW Pub. No. (HRA) 78-1005, 1978.

¹²*Monthly Vital Statistics Report*.

An Update On Workmen's Compensation

CHARLES W. McGUIRE

Accidents have been a part of business since the industrial revolution, and by 1900, industrial accidents were at an all-time high in this country. Some employees were injured as a result of their employer's negligence in providing unsafe working conditions, but many other accidents were not due to any employer negligence, but, were simply unavoidable. Although the injured employee could recover damages from a negligent employer, negligence was difficult to prove and the litigation was timely and expensive. Even if the employee had a good claim, expense and delays often prompted acceptance of compromise for a fraction of full value.

Furthermore, because of several defenses available to the employer and the problems of litigation, the injured worker, without sufficient resources or time to pursue such a claim, would often forfeit an otherwise legitimate claim. To remedy this industrial dilemma,

many states, including Arizona, enacted workmen's compensation practices and guidelines so that workers could be compensated for on-the-job injuries.

The purpose of this article is to provide a brief history and explanation of the Arizona Workmen's Compensation system and specifically provide an update by discussing the 1980 Senate Bill 1001, which marks a significant change in Arizona's workmen's compensation laws.

WORKMEN'S COMPENSATION THEORY

The ultimate aim of workmen's compensation is to provide wage benefits and medical care to the victims of work-related injuries. Workmen's compensation laws originated when industrial accidents increased, calling for an approach dismissing common-law remedies. The comprehensive design of workmen's compensation can be summarized as follows:

- An employee who is injured is automatically entitled to certain benefits.
- Fault is immaterial — the employee's contributory negligence does not lessen the right to compensation, and the employer's care and precautions do not lessen liability.
- Coverage is extended to employees only and not to independent contractors.
- Benefits include partial wages, hospital and medical expenses, and in some cases, death benefits.

In 1980, the Arizona legislature passed several amendments to the workmen's compensation law, which significantly changed the system. Included in the amendments were various procedural changes, a new section relating to heart cases, a new section relating to mental cases, and a new subsection relating to economic conditions and amount of recovery.

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- In exchange for the benefits indicated, the employee, his family and dependents give up their common law right to sue the employer for damages.
- If third parties are responsible for the accident, recovery from the third party goes first to the employer for reimbursement and the remainder to the employee.
- Administration of workmen's compensation is in the hands of an administrative agency (in Arizona it is the Industrial Commission).
- Each employer is required to secure his liability through insurance (either through the state or through private insurers).

The workmen's compensation laws apply to every person who employs any workers or operatives on a regular basis in the same business or establishment under contract for hire including the state, each county, town, municipal corporation, and school district. Originally, Arizona laws applied only to employers with three or more employees.

One type of coverage for workmen's compensation is insurance through the state compensation fund or through an authorized insurance carrier. Alternatively, coverage can be retained by furnishing to the Arizona Industrial Commission proof of financial ability to directly pay the amount of compensation when due. Insurance carriers are obligated to inform the Industrial Commission of any cancellation of the policy.

Injury in the course of employment must be reported to the commission, and the employee is entitled to certain statutory benefits. Payment for the employee's claim will be based upon a schedule of injuries and compensation. For example, loss of a thumb would require payment of 55 percent of the employee's average monthly wage for fifteen months. The claim amount of an unscheduled injury (one not listed in the statute) is determined by loss of earning capacity and must be established by other factors to determine a proper amount of disability payments. Death benefits are paid to surviving relatives in the event of a job-related death.

ARIZONA'S HISTORY OF WORKMEN'S COMPENSATION

Arizona's workmen's compensation law commenced in 1925 with the adoption of a constitutional amendment (Article 18, Section 8) which provided that the legislature would enact a workmen's compensation

law covering the manual or mechanical labor force in all public employment and selected private employment. The law was to apply to any injury or accident arising out of or in the course of employment.

In accordance with the amendment, the legislature enacted a series of laws creating the Industrial Commission, whose initial function was to settle any disputed claims and act as insurer for employers for the payment of claims. The commission also made the initial determination as to the validity of the claim, although the worker was afforded an appeals procedure in the event a claim was denied.

The system remained relatively stable until 1969 when some fundamental changes were made including the division of the Industrial Commission into two bodies — the State Compensation Fund, which is the state insurance company, and the Industrial Commission, which is designed to be the court of exclusive jurisdiction over workmen's compensation laws. In addition, by allowing premium rates to be set by the insurance department rather than the Industrial Commission and permitting private insurance carriers to compete with the State Fund, the 1969 amendments brought the workmen's compensation system closer to an insurance system.

The amendments also expedited the processing of claims. The accident must be reported to the insurance carrier and to the commission within ten days after the employer has notice of an accident, and the carrier is to proceed immediately with payment without a determination by the commission. Payment or denial must occur within twenty-one days from the time the carrier is notified. The process of appealing a carrier's decision was also shortened. Rather than the commission making the decision on a claim, the hearing officer now makes the determination on the case, subject to right of appeal to the commission. Appeal may be taken when problems on amount of payment, changes in medical stability and carrier liability occur. In these situations, the employee, to preserve individual rights, must have filed a claim within one year from the time of the accident or have had payments commenced by an employer or carrier.

The upshot of the 1969 amendments was to perfect the processing of an increasing number of claims. The by-product, however, was the increasing number of claims for unscheduled injuries and for injuries that were questionably related to the workplace, such as heart attacks and stress. As a result Arizona's workmen's compensation premium costs measured against payroll became the second highest in the coun-

try and were growing at a rate of one and a half times the national average.

In reaction to the ever increasing costs and several courts' decisions broadening coverage, the legislature passed Senate Bill 1001 in 1980, which significantly changed the workmen's compensation system. Included in the amendments were various procedural changes; a new section relating to heart cases; a new section relating to mental cases; and a new subsection relating to economic conditions and amount of recovery.¹

THE PROCEDURAL CHANGES

The first and most fundamental procedural change effected by the new law relates to filing deadlines. The time for filing a request for hearing was extended from sixty to ninety days, and the term "filed" was clarified by the legislature to mean the claim was in the possession of the Industrial Commission. The ninety-day filing period was not to be extended except in unusual circumstances such as insanity or incapacity. The legislature emphasized the absolute finality of such deadlines as a response to previous court decisions that had waived the deadlines.

The second procedural change related to the one-year time limit for filing a claim with an insurer. According to the amendment, the time begins to run when the employee knows or should know that a compensable injury has been sustained. Again, only in exceptional circumstances can the one-year filing deadline be extended.

The bill also provided for a new evidentiary standard with regard to hernia injuries. Traditionally, hernias were presumed to be nontraumatic and limited to two months' benefits. However, in *Figuro v. Industrial Commission*,² the Supreme Court declared that all hernias would be presumed real traumatic hernias compensable on the basis of reduced earning capacity rather than as a scheduled injury. The amendment redefines the traditional view and provides further that the burden of proof is on the employee to establish by a "preponderance of evidence" that the hernia is a real traumatic hernia. Thus, the employee must produce some evidence of trauma which overcomes or is not controverted by other medical evidence or authority.

Another procedural change dealt with an employee's right to sue a coemployee for negligence for a work-related injury. Such suits are prohibited under a constitutional amendment that was passed in November, 1980. Except in certain medical malpractice actions, employee suits against other employees for work-related injuries are prohibited.

THE HEART AMENDMENT

Workmen's compensation cases involving heart attacks or heart disease have been significantly difficult because the injury must be an accident arising out of and in the course of employment. Many heart-related injuries are sudden and brought about by a specific event; yet many others are the result of stress buildup and other factors over time. Prior to the 1980 amendments there were no legislative guidelines, and medical opinion differed on whether the heart problem was caused by the employment situation.

The consequence was that the courts, in the absence of such guidelines, developed their own tests for determining whether or not heart injuries were compensable. The Arizona Supreme Court adopted its test in *Thiel v. Industrial Commission*³ in 1965, when the widow and children of a heart attack victim brought a workmen's compensation action to collect death benefits. The employee, who worked long and hard hours, but who also did not follow his physician's advice concerning smoking, drinking, and other physical activities, died of a heart attack at age thirty after a visit to a friend's home on Sunday evening. Medical experts testified that he would have lived longer if he had been involved in a less stressful job.

In ruling in favor of the family, the court held that the conditions of employment need be only "a" cause of the heart attack and need not have been the "sole" cause of the heart attack, as long as it could be established that the employment conditions contributed to and accelerated the heart attack.

The Arizona Court of Appeals, after following the Supreme Court's test in the *Thiel* case,⁴ modified it in part in *Stotts v. Industrial Commission*.⁵ In that case a custodian who was lifting heavy garbage cans at work suffered a heart attack. In denying benefits, the court noted that medical testimony labeled the activity "not unusual" and commented on the state of heart cases in workmen's compensation:

The courts are thus faced with a dilemma! They bind themselves to follow medical opinion as to causation in heart attack cases The result has been a hodgepodge of decisions where compensation has been granted under one set of facts and denied under similar facts We cannot help but wonder whether the industrial heart attack area is not a proper subject for definitive legislation, so as to bring some order out of the chaos which has resulted from the present statutes and decisions in this crucial area of our workmen's compensation laws.⁶

Finally, with the 1980 amendments, a heart-related injury is defined and is compensable only if "some injury, stress or exertion related to the employment was a substantial contributing cause" of the injury. Thus, the standard has shifted from "sole" cause to "a" cause to "substantial" cause. The new standard should result in more precise medical testimony even though each case will differ, but establishing "substantial" will be a more definitive chore than establishing "sole" or "a contributing cause." The language also conforms to the standards of proof in negligence cases which offers precedent and also allows medical experts to work with a familiar standard.

The legislature also limited the liability for heart-related injuries. The only employer liable for such injury is the last employer, not any previous employers.

MENTAL CASES

Next to heart cases, the workmen's compensation cases involving claims for stress or mental disease arising from employment were causing the greatest controversy. As evidence of the increasing number of claims in the mental area, in California between 3,000 and 4,000 psychiatric injury claims are filed each year and about half the claimants receive benefits ranging between \$1,400 and \$1,900.⁷ The secretary who felt overworked, a sales clerk forced to work late nights, and the patrol officer depressed because of having to cruise a quiet, rural area — all were allowed workmen's compensation benefits.

The Arizona courts have recently been liberal in their interpretation of "arising out of and in the course of employment" in the mental injury cases. However, the history of such cases indicates that this liberalism developed with time. In *Phelps Dodge Corp. v. Industrial Commission*⁸ an employee caught in a gaseous explosion and forced to run for clean air later became neurotic about fear of injury and ailments which might result from the experience. In denying recovery for the neurosis, the court stated that although the injury arose out of the accident, there was no proof that the neurosis was the result of the injury.

In a later case, *American Smelting and Refining Co. v. Industrial Commission*,⁹ a miner, after receiving medical treatment and resting for four days because of injuries sustained when rocks fell on his shoulders, became slowly paralyzed about the neck and shoulders and eventually became fully paralyzed. In granting compensation the court stated that nervous shock was an injury and neurosis is a disease resulting from that injury.

The early cases permitted recovery in circumstances where there was an accident and some physical injury. Later cases began permitting recovery for an exclusively mental injury. In *Fireman's Fund Insurance Co. v. Industrial Commission*,¹⁰ an employee who was continually given new accounts and more and more responsibility suffered an unanticipated mental breakdown. During this time she was also experiencing marital problems and her mother had just recently passed away. In allowing recovery, the Arizona Supreme Court held that physical injury was not necessary for recovery. Further, the court found the injury to be accidental in that it was "unexpected" i.e., the result of the delegation to her of excessive responsibilities resulted in the unexpected — her mental breakdown.

The Supreme Court has held that not every emotional stress case is compensable, since some job stress is usual, ordinary, and not unexpected. The resulting confusion in the judicial decisions effected a redefinition of mental injury in the 1980 amendments. Under the new law a mental injury is not considered an accident and is not compensable unless there is some unexpected, unusual or extraordinary stress related to the job. Moreover, even if the stress is shown to be job-related, the employee must still establish that the stress was a "substantial contributing cause" of the mental injury. As with heart cases, an employee can recover only from the present employer.

The effects of this amendment should be to restrict the types of cases in which recovery for mental stress will be permitted. In addition, evidence of other stressful events will be permissible in establishing whether the substantial-effect test is met.

ECONOMIC CONDITIONS AND AMOUNT OF RECOVERY

Prior to the 1980 amendments, two major problem areas existed regarding the amount of the injured employee's claim. The first area was that of prior injuries. Again, the court apparently dealt with the situation in a manner that did not follow legislative intent. In successive injury cases in which the employee had a prior scheduled injury, the courts treated the second injury as unscheduled for purposes of determining the amount of the award. Under the 1980 amendments, if a current scheduled injury was preceded by a permanent disability, there is a presumption that the injury is unscheduled unless the employee can prove that his prior earning capacity was not affected. If the previous disability did not result in a loss of earning capacity,

then there is a presumption that the current injury is scheduled. If the prior injury was industrial, then factors such as age, education, time between injuries, wages and performance can be examined to rebut the presumption. If the prior injury was nonindustrial, then the effect on earning capacity and performance can be considered.

The effect of these provisions is to make it less expensive for employers to hire handicapped employees since prior injuries are now a factor in determining award amounts in light of the employee's true earning capacity rather than an amount determined without consideration of injury.

The second major issue was whether evidence concerning economic conditions and the job market could be considered in determining the amount of the award. It appeared that 1969 law permitted the consideration of such evidence, but the Supreme Court, in *Wiedmaier v. Industrial Commission*¹¹ held that the Industrial Commission may not consider economic conditions in determining the amount of lost earnings. The court held that the commission's award based on alternative employment to an injured carpenter unable to work because of scarce opportunities was incorrect.

However, the 1980 amendments now provide that evidence regarding economic conditions is admissible to

determine loss of earning capacity. One recent economic change increased the maximum average wage for the computation of compensation benefits from \$1,250 to \$1,325 per month. The resulting maximum monthly benefit would be raised from \$833.25 to \$883.25.

CONCLUSION AND EXPECTATIONS

Some convincing reasons have been advanced for Arizona's second highest workmen compensation premium rate in the country (when measured against payroll). The recent string of case decisions contrary to legislative intent imposed burdensome standards of proof on employers, lessened burdens of proof for employees, and encouraged new types of claims such as heart and mental injury cases.

In response, the 1980 amendments redefine the legislative intent, overrule some Arizona court decisions, and may eventually cut back employer's costs. The amendments represent a milestone in the struggle between the courts and legislature. The legislature, in answer to requests from the court, was able to grasp some problem areas and improve the system of Arizona's workmen compensation.

¹See generally Arizona Revised Statutes, Title 23, Chapter 6.

²543 P.2d 785 (1976).

³494 P.2d 711 (1965).

⁴*Hume v. Industrial Commission*, 494 p.2d 37 (1972); *State Compensation Fund v. Keefe*, 526 P.2d 1266 (1974); *McNeely v. Industrial Commission*, 501 p.2d 555 (1972).

⁵488 P.2d 495 (1971); see also *City of Phoenix v. Industrial Com-*

mission of Arizona, 585 P.2d 257 (1978).

⁶488 P.2d 495, 498.

⁷*Wall Street Journal*, September 17, 1980, Section 2, p. 1.

⁸49 P.2d 391 (1935).

⁹123 P.2d 163 (1942).

¹⁰579 P.2d 555 (1978).

¹¹589 P.2d 1 (1979).

Phoenix Cost of Living: An Evaluation and Comparison

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The Urban Family of Four Budget (UFFB) is frequently used both to indicate changes in cost of living for major cities and to compare the cost of living among various cities. In making such comparisons, however, it is essential that the methodology used for the studies be the same. The purpose of this article is to update the Phoenix Urban Family of Four Budget using the same methodology as that used by the federal government and then to compare Phoenix cost of living with other cities.

Since 1968 the Bureau of Business and Economic Research (BBER) at Arizona State University has collected cost of living data via direct pricing. These data were accumulated according to methodology developed

by the Bureau of Labor Statistics (BLS) as described in Bulletins 1570-1 and 1570-3 (Autumn, 1966), and were reported as the budget necessary to maintain a moderate standard of living for a family of four in the Phoenix area.

Until 1979 the Phoenix budget was compared with data reported by the Bureau of Labor Statistics for twenty-four other cities across the country. In the mid-1970s, the Phoenix budget began increasing at a rate faster than the national average. Initially, researchers attributed the increased rate to problems associated with the fast growth of the Phoenix metropolitan area. Closer analysis of the BLS data, however, revealed that other fast growing areas were not increasing at the accelerated rate experienced in Phoenix. This discrepancy was also noticed by the University of Arizona's Division of Economic and Business Research which, since 1977, has collected Tucson budget data. In particular, other Sun Belt cities were experiencing budget increases at or below the national average. Investigation showed that because of differences in methodology, accurate comparisons of the Arizona cities with other cities were not possible. While the Phoenix and Tucson budgets priced goods directly in the stores, the BLS studies updated pricing using the Consumer Price Index. The methodology for the Phoenix area included the direct pricing of over 400 consumer goods and services and developing a dollar amount for consumption of a prescribed mix of these goods and services. After the consumption amount was determined, the total

As with any statistical measure, cost of living data can vary according to the methodology used. This article updates the Phoenix Family of Four Budget using the method that the Bureau of Labor Statistics uses for twenty-four other cities, thus enabling comparisons to be made. In this revision, the Phoenix Urban Family of Four Budget is \$21,844, ranking Phoenix in twenty-second place. This study was done by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cosponsorship with Valley National Bank.

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budget was developed by adding the federal, state and Social Security taxes to be paid on an income level equal to the total budget for this mythical family of four.

In both Phoenix and Tucson, the total budget amounts were above the national average and the two cities were quickly moving to the top of the list when compared with budgets of the twenty-four cities as reported by the Bureau of Labor Statistics. Those figures and the national average are reported each April by the BLS, which states that their budgets have been updated using the Consumer Price Index (CPI) since 1969 when the last direct pricing took place. Thus, the differences in these two methods precludes the accurate and valid comparison of results.

A recent study, however, has made it possible to revise the budget in a manner more comparable with the Bureau of Labor Statistics methodology. This study was sponsored by Valley National Bank and conducted by the Bureau of Business and Economic Research, College of Business Administration at Arizona State University.

The availability of the previous directly priced budgets, along with the CPI updated budgets developed in this study will provide a unique opportunity to compare and contrast the alternate methods of collecting, developing and reporting cost of living data.

DIRECTLY PRICED BUDGETS

The goods and services priced in the budgets, specifications describing each item, and the quantities consumed by this mythical family were set by the BLS, and were based on consumer expenditure surveys done in the early 1960s. The makeup of the budget has not changed over the years nor have substitutions been introduced to reflect changing patterns of consumer spending.

The budget figures are determined for a family of four that includes a 38-year-old husband employed full time, a wife not employed outside of the home, a 13-year-old son, and an 8-year-old daughter. The family is assumed to be well established in the community and in good health. The couple has been married fifteen years and the husband is an experienced worker in his field. The family has accumulated an average inventory of home furnishings, clothing, major durables, and other items. Three-fourths of the families are assumed to be homeowners with mortgage payments on a house purchased eight years earlier. The remaining families, twenty-five percent, are renters.

CPI UPDATED BUDGETS

The figures developed in this study started with the 1969 directly priced budgets for the Phoenix metropolitan area. Since the BLS also direct priced in 1969, the 1969 Phoenix budget is comparable to the budgets compiled for other cities by the BLS. Based upon an internal BLS note which explains the methodology that was used to develop the budget figures for twenty-four other cities since 1970, these figures were updated to produce the consumption figures for 1970 through 1980.

This methodology involves the application of inflation rates measured by specific CPI categories to the appropriate UFFB categorical dollar amounts. For instance, if the personal care CPI category measured an increase of 8 percent in a given year, and the budget for personal care in the UFFB the previous year was \$500, the new personal care budget would be \$540. The breakdown of the Phoenix data to the level of detail

TABLE 1

URBAN FAMILY OF FOUR BUDGET METROPOLITAN PHOENIX Comparison of CPI Updated Versus Directly Priced Budget Data for 1980

	CPI Updated Budget	Directly Priced Budget	Directly Priced as a Percent of CPI Updated
TOTAL BUDGET.....	\$21,844	\$24,402	111.7
TOTAL FAMILY			
CONSUMPTION.....	16,539	18,167	109.8
Food.....	5,481	5,756	105.0
Housing.....	4,497	5,374	119.5
Transportation.....	2,155	2,474	114.8
Clothing.....	1,224	1,514	123.7
Personal Care.....	560	630	112.5
Medical Care.....	1,434	1,406	98.0
Other Family			
Consumption.....	1,188	1,010	85.0
OTHER COSTS ^a	858	868	101.2
TAXES.....	4,447	5,367	120.7
Social Security.....	1,339	1,496	111.7
Federal Income Tax.....	2,703	3,326	123.0
State Income Tax.....	405	545	134.6

^aOther Costs include life insurance premiums, occupational expenses, gifts and contributions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University in cosponsorship with Valley National Bank.

prescribed by the BLS explanatory note was not possible in all budget categories since a history of this detail is not available in the Phoenix area. However, every attempt was made to make these figures as comparable to the BLS figures as possible.

Since taxes are not indexed in the Consumer Price Index, the consumption figures (Total Family Consumption plus Other Costs) were computed first. After determining the dollar amount necessary for consumption, the next step was to determine the Total Budget amount necessary for the family to pay actual federal, state and Social Security taxes on this amount.

RESULT OF THE CPI UPDATING

Using the CPI updating, the 1980 Urban Family of Four Budget for the Phoenix metropolitan area at the intermediate level is \$21,844. The individual budget components are presented and compared to the directly priced budget in Table 1. For most budget categories the directly priced data is higher than the CPI updated figures.¹

The total budget, as compared with the twenty-four BLS cities, is presented in Table 2. This comparison ranks Phoenix in twenty-second place between St. Louis

TABLE 2
URBAN FAMILY OF FOUR BUDGET
METROPOLITAN PHOENIX
Comparative Living Costs: 1969 and 1980
Metropolitan Phoenix and Twenty-Four Other Metropolitan Areas

Area	1969 Budget and Rank	1980 Budget and Rank	1969-1980 Dollar Increase	1969-1980 Percentage Increase	Percent of 1980 Urban U.S. Average
Urban United States					
Average	\$10,279	\$23,134	\$12,855	125.1	100.0
Honolulu	12,118 (1)	28,488 (1)	16,370	135.1	123.1
Boston	11,253 (2)	27,029 (2)	15,776	140.2	116.8
New York	11,247 (3)	26,749 (3)	15,502	137.8	115.6
Washington, D.C.	10,390 (10)	25,203 (4)	14,813	142.6	108.9
San Francisco-Oakland	10,837 (4)	24,704 (5)	13,867	128.0	106.8
Philadelphia	10,221 (12)	24,364 (6)	14,143	138.4	105.3
Milwaukee	10,739 (6)	24,028 (7)	13,289	123.7	103.9
Buffalo	10,747 (5)	23,995 (8)	13,248	123.3	103.7
Minneapolis-St. Paul	10,191 (13)	23,630 (9)	13,439	131.9	102.1
Cleveland	10,470 (8)	23,429 (10)	12,959	123.8	101.3
Seattle	10,553 (7)	23,392 (11)	12,839	121.7	101.1
Baltimore	9,898 (18)	23,389 (12)	13,491	136.3	101.1
Chicago	10,452 (9)	23,387 (13)	12,935	123.8	101.1
Detroit	9,949 (17)	23,168 (14)	13,219	132.9	100.1
Denver	9,737 (19)	22,813 (15)	13,076	134.3	98.6
San Diego	9,979 (16)	22,727 (16)	12,748	127.7	98.2
Cincinnati	9,736 (20)	22,681 (17)	12,945	133.0	98.0
Kansas City	10,034 (14)	22,504 (18)	12,470	124.3	97.3
Los Angeles-Long Beach	10,247 (11)	22,500 (19)	12,253	119.6	97.3
Pittsburgh	9,684 (22)	22,492 (20)	12,808	132.3	97.2
St. Louis	10,019 (15)	22,248 (21)	12,229	122.1	96.2
PHOENIX	9,731 (21)	21,844 (22)	12,113	124.5	94.4
Houston	9,176 (24)	21,572 (23)	12,396	135.1	93.2
Atlanta	9,117 (25)	21,131 (24)	12,014	131.8	91.3
Dallas	9,340 (23)	20,766 (25)	11,426	122.3	89.8

Source: Metropolitan Phoenix data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank; other data from the U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

(\$22,248) and Houston (\$21,572). In 1969, the Phoenix directly priced budget of \$9,731 ranked twenty-first between Cincinnati (\$9,736) and Pittsburgh (\$9,684).

The yearly budgets for 1970 through 1980, updated by the CPI components applied to the 1969 base, are presented in Table 3; the directly priced budgets for these years are presented in Table 4.

Table 5 presents the twelve years of CPI updated budgets for the Phoenix metropolitan area as compared to the United States Urban Average. Also included in this table is the ranking that Phoenix would have had when compared to the twenty-four other BLS cities. Throughout these twelve years Phoenix's lowest rank of eighteenth was in 1978 and the highest rank of twenty-second was in 1970, 1975, 1976, 1977 and 1980. This narrow range of variation is consistent with the original hypothesis of this study — that the increasing rank could be explained by the difference in methodologies

between the direct pricing of the Bureau of Business and Economic Research and the CPI updating utilized by the Bureau of Labor Statistics, U.S. Department of Labor.

CONCLUSION

This study confirms that the methodologies used in developing and reporting cost of living studies can have a great impact on final figures. Although not completely comparable with the BLS methodology, the variation of this study with the nationally reported figures is much smaller than the directly priced budget data.

These differences indicate that the UFFB cost of living figures must be interpreted with caution. The fact that two similar methodologies can present different results and that the methodology of the study is relatively outdated suggests that the study should only be used as an indicator of the relative costs of living.

¹For a more complete discussion of the components and makeup of the Urban Family of Four Budget, see Robert T. Keim and Susan B.

Swirley, "Phoenix Family Budget: 1980," *Arizona Business*, May, 1981, pp. 19-24.

TABLE 3

URBAN FAMILY OF FOUR BUDGET METROPOLITAN PHOENIX Dollar Amounts Derived from 1969 Direct Pricing Updated Yearly Through 1980 Using CPI

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
TOTAL BUDGET.....	\$9,731	\$10,184	\$10,597	\$10,912	\$12,185	\$13,360	\$14,222	\$14,915	\$16,321	\$18,215	\$19,862	\$21,844
TOTAL FAMILY												
CONSUMPTION.....	7,645	8,004	8,410	8,687	9,519	10,279	11,000	11,488	12,605	13,913	15,271	16,539
Food.....	2,374	2,430	2,443	2,602	3,067	3,360	3,659	3,597	3,974	4,452	4,909	5,481
Housing.....	2,299	2,380	2,447	2,507	2,645	2,855	3,021	3,281	3,646	4,004	4,405	4,497
Transportation.....	867	897	1,044	1,037	1,164	1,224	1,280	1,376	1,510	1,630	1,904	2,155
Clothing.....	780	809	802	809	878	938	969	1,049	1,136	1,225	1,222	1,224
Personal Care.....	252	275	267	278	302	349	359	381	410	463	501	560
Medical Care.....	452	602	703	742	747	773	891	950	1,011	1,123	1,288	1,434
Other Family Consumption.....	621	613	704	711	716	781	820	864	918	1,017	1,072	1,188
OTHER COSTS.....	504	515	529	536	559	585	614	629	662	711	785	858
TAXES.....	1,582	1,665	1,657	1,689	2,107	2,496	2,608	2,798	3,054	3,591	3,806	4,447
Social Security.....	374	374	406	468	632	772	825	873	955	1,071	1,218	1,339
Federal Income Tax.....	1,208*	1,158	1,099	1,054	1,258	1,459	1,469	1,576	1,668	2,086	2,239	2,703
State Income Tax.....		133	152	167	217	265	314	349	431	434	349	405

*Original breakdown of 1969 state and federal taxes using Indexed Budget was not available.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University in cosponsorship with Valley National Bank.

TABLE 4

URBAN FAMILY OF FOUR BUDGET
METROPOLITAN PHOENIX

Dollar Amounts Based on Direct Pricing
1969-1980

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
TOTAL BUDGET.....	\$9,731	\$10,226	\$10,470	\$10,847	\$12,151	\$13,969	\$15,060	\$16,047	\$17,972	\$19,858	\$22,362	\$24,402
TOTAL FAMILY												
CONSUMPTION.....	7,645	8,004	8,308	8,629	9,490	10,750	11,699	12,423	13,785	15,085	16,858	18,167
Food.....	2,374	2,452	2,448	2,622	3,108	3,428	3,743	3,890	4,283	4,842	5,274	5,756
Housing.....	2,299	2,369	2,442	2,525	2,640	3,118	3,431	3,688	4,260	4,722	5,217	5,574
Transportation.....	867	897	1,042	1,033	1,164	1,246	1,495	1,646	1,754	1,880	2,200	2,474
Clothing and Personal Care.....	1,032	1,130	1,120	1,147	1,253	1,498	1,473	1,559	1,684	1,751	2,021	2,144
Medical Care.....	452	528	606	638	644	702	758	829	962	1,039	1,234	1,409
Other Family Consumption.....	621	628	650	664	681	758	799	811	842	851	912	1,010
OTHER COSTS.....	504	517	527	539	568	612	645	675	717	766	823	868
TAXES.....	1,582	1,705	1,635	1,679	2,093	2,607	2,716	2,949	3,470	4,007	4,681	5,367
Social Security.....	374	374	406	468	632	772	824	895	965	1,071	1,371	1,496
Personal Income.....	1,208	1,331	1,229	1,211	1,461	1,835	1,892	2,054	2,505	2,936	3,310	3,871

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University in cosponsorship with Valley National Bank.

TABLE 5

URBAN FAMILY OF FOUR BUDGET
METROPOLITAN PHOENIX

Comparison of Phoenix Versus U.S. Urban Average and
Phoenix Rank Among Other Cities

Year	Urban Average	Phoenix Average	Dollar Difference	Percent of Urban U.S. Average	Phoenix Rank Among 25 Cities
1969	\$10,064	\$ 9,731	\$ 333	96.7	21
1970	10,664	10,184	480	95.5	22
1971	10,971	10,597	374	96.6	20
1972	11,446	10,912	534	95.3	21
1973	12,626	12,185	441	96.5	20
1974	14,333	13,360	973	93.2	21
1975	15,318	14,222	1,096	92.8	22
1976	16,236	14,915	1,321	91.9	22
1977	17,106	16,321	785	95.4	22
1978	18,622	18,215	407	97.8	18
1979	20,517	19,862	655	96.8	21
1980	23,134	21,844	1,290	94.4	22

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University in cosponsorship with Valley National Bank.

The Arizona Business Scene



Cost of Living Studies: Observations and Comparisons



A true cost of living study is useful for several purposes: to allow an individual or family to compare its expenses against a norm; to measure inflation; and to determine differences in living expenses in different cities. The latter purpose is the most common, especially in Arizona, because of its significant levels of immigration from all parts of the country.

The Consumer Price Index (CPI) is not a cost of living index, though it is commonly referred to as such. The CPI is actually a price index, and while it can be used as a measure of inflation, it cannot be used as a cost of living index.

There are several significant differences between a cost of living index and a price index:

- A cost of living index includes a comprehensive list of expenditures, whereas a price index excludes income taxes and certain other items, such as life insurance and contributions.
- A cost of living index adjusts the relative importance of items included in the index on an ongoing basis to match changes in consumer expenditure patterns. A price index makes only periodic revisions to a fixed market basket.
- A cost of living index expresses expenditures in dollar values, but a price index can only measure percentage changes.

Perhaps the best known cost of living study is the Urban Family of Four Budget (UFFB) performed by the federal government. An adjunct to this study for retirees is the Retired Couple's Budget. Although the

Department of Labor does this study in twenty-four cities across the country, neither Phoenix nor Tucson is included. In order to fill this void, the study is done for these cities, according to the government specifications, by Arizona State University and the University of Arizona. As discussed in another article in this issue of *Arizona Business*, however, there are several shortcomings to this study.¹

A limited number of other cost of living studies exist, some performed by private corporations that do not make all of their findings public. The most comprehensive of these other studies that is available to the public is conducted by the Chamber of Commerce Researchers Association (CCRA). This is a voluntary study performed by local chambers of commerce, including those of both Phoenix and Tucson. The study is done quarterly by over 200 cities and towns, though many large cities do not participate. It does not fit the requirements of a true cost of living study, however, because taxes are not included and because a cost of living in dollars is not presented.

Some general findings about the cost of living can be derived from these various studies, particularly the UFFB and CCRA studies. The overall cost of living does vary by city size, with nonurbanized areas having the lowest costs of living and very large metropolitan areas having the highest costs of living. This relationship between expenses and city size varies with the type of expenditure: there is relatively little difference in food, transportation, clothing, and utility costs between large

TABLE 1
COST OF LIVING INDEXES
FOR SELECTED MAJOR CITIES
(NATIONAL AVERAGE = 100)

City	UFFB ¹	CCRA ²	AIR, Inc. ³	Runzheimer & Co. ⁴	Employee Transfer Co. ⁵
Anchorage.....	128	—	—	—	—
Albuquerque.....	—	98	—	—	—
Atlanta.....	91	—	94	—	—
Baltimore.....	101	104	—	—	—
Birmingham.....	—	98	—	—	88
Boston.....	117	—	113	—	109
Buffalo.....	104	101	—	106	—
Chicago.....	101	—	105	114	100
Cincinnati.....	98	104	—	—	90
Cleveland.....	101	—	100	—	—
Columbus.....	—	103	—	—	88
Dallas-Ft. Worth.....	90	97	—	102	—
Detroit.....	100	109	101	—	—
Denver.....	99	107	96	—	—
El Paso.....	—	100	—	96	—
Honolulu.....	123	—	—	119	—
Houston.....	93	107	97	—	89
Indianapolis.....	—	100	—	97	—
Kansas City.....	97	98	—	—	—
Los Angeles.....	97	—	110	—	107
Louisville.....	—	98	—	—	89
Miami.....	—	—	95	107	—
Milwaukee.....	104	—	—	—	—
Minneapolis-St. Paul.....	102	—	107	—	104
Nashville.....	—	99	—	96	—
New Orleans.....	—	—	94	94	—
New York.....	116	132	119	121	123
Philadelphia.....	105	—	100	—	105
Phoenix.....	94	103	89	100	94
Pittsburgh.....	97	—	98	—	100
Portland.....	—	106	—	—	—
Sacramento.....	—	104	—	107	—
St. Louis.....	96	99	91	—	—
Salt Lake City.....	—	104	—	—	91
San Diego.....	98	113	—	—	—
San Francisco.....	107	—	112	130	—
Seattle.....	101	—	92	99	—
Stamford.....	—	127	108	—	118
Tucson.....	—	102	—	—	—
Washington.....	109	—	108	—	111

Sources: ¹UFFB (Urban Family of Four Budget): United States Department of Labor, *Bureau of Labor Statistics News*, April 22, 1981.

²American Chamber of Commerce Researchers Association, *Index Report*, Fourth Quarter, 1980.

³Associates for International Research, Inc., Cambridge, Massachusetts, *Executive Living Costs in the United States*, October, 1980.

⁴Runzheimer & Company, published in "Costs of Living," *Wall Street Journal*, May 5, 1980.

⁵Employee Transfer Company, published in "Living Costs Are Surveyed," *Arizona Republic*, March 11, 1981.

and small cities, but there is a significant difference in housing, health care, taxes, and miscellaneous other expenses between large and small cities.

There is also a significant relationship between the cost of living and geographical regions of the country.

The West Coast (California, Oregon, Washington) and Northeast (New York and the New England states) regions of the nation have the highest overall costs of living. The Middle Atlantic states (Virginia, Pennsylvania, Maryland, New Jersey, Delaware) are also above

the national average. The costs of living in all other regions of the country are slightly below the national average, with little difference between regions, though some of the southern states appear to have the lowest living costs in the nation. This geographical pattern also varies by the type of expenditure:

- Food costs vary little across the country, though the Northeast is slightly more expensive and the South slightly less expensive.

- Homeownership costs (excluding utilities) vary significantly by region, with the West Coast by far the most expensive, followed by the Northeast and the Rocky Mountain states (Arizona, New Mexico, Colorado, Utah, Idaho, Wyoming, Montana).

- Utility costs vary even more greatly by region, with the Northeast and Mid-Atlantic states the most expensive and the West and Mountain states the least expensive.

- Total housing costs (homeownership and utilities) are thus the greatest in the Northeast and also above average in the West; these costs are the least in the South and South Central (Texas, Oklahoma, Arkansas, Louisiana) states.

- Transportation costs vary little across the country, although the Northeast and West regions are slightly higher.

- Health care is very expensive in the Western region and relatively inexpensive in the North central region (North and South Dakota, Nebraska, Kansas, Minnesota, Iowa, Missouri) and in the South.

- The highest overall taxes are in the Northeast and Mid-Atlantic regions; lowest taxes are the South and South Central.

In Arizona, cost of living information is available for both Phoenix and Tucson. Since no study has been done in any other part of the state, it is not clear if the national relationship between cost of living and city size holds in Arizona where long distances between towns may add to certain costs. Overall, both Phoenix and Tucson are quite near the national average cost of living, but less than the average for larger cities. The cost of living in metropolitan Phoenix is slightly greater than in Tucson, which is not surprising given the difference in population. Food costs in Arizona are slightly below the national average, as are utility costs. Homeownership expenses are near the average for large cities, but health care and miscellaneous other expenses

are greater in Phoenix and Tucson than in the average of other large cities.

A comparison of the overall cost of living in Phoenix and Tucson with other metropolitan areas is presented in Table 1. Index values rather than dollars are shown, because dollar values are either not available or not comparable among the various studies. Each of these cost of living studies has different assumptions and limitations that create variations in the index values for any given city. The following general conclusions about specific cities are based on information from all five indexes. In making these conclusions, the researchers discounted any study of a city that shows widely different results from other studies of that city.

- Cities in the Northeast and Middle Atlantic regions such as New York, Stamford, Boston and Washington, D. C. are the most expensive places in the United States.

- Cities on the West Coast, including Los Angeles, San Francisco, San Diego, and Sacramento, are nearly as expensive.

- The least expensive cities are in the South and South Central states: Atlanta, New Orleans, Louisville, Birmingham, Houston, and Dallas, for example.

The cost of living is only one part of a larger concept termed the "standard of living." The standard of living compares the cost of living to wage and salary levels; it also includes a measure of how this relationship is changing over time. Thus, the current inflation rate, such as that measured by the Consumer Price Index, is also a consideration in the standard of living. While Phoenix and Tucson now have a cost of living comparable to that of the national average, each city has had an inflation rate greater than the national average in the last three to four years. Should these higher than average inflation rates continue, Phoenix and Tucson will become relatively more expensive cities.

Wage and salary levels are just as important as the cost of living in determining the standard of living. A city with a high cost of living can have a good standard of living if wage and salary levels in that city are comparatively high. Thus, an expensive city can have a better standard of living than an inexpensive city with very low wages. The standard of living, however, is difficult to assess; this will be the topic of a future "Arizona Business Scene."

¹An additional criticism of this study is that it is geographically biased, when compared to other cost of living studies. Western cities

are shown to be far less expensive in the UFFB, a factor that relates largely to homeownership costs.

A Survey of Arizona Business Conditions

HAROLD FEARON

The Arizona economy turned in a lackluster performance in June, according to results from the monthly business survey of the Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona. Both new orders received and employment decreased slightly and production enjoyed only a very small increase. Evidently the state's economy is feeling the influence of the same negative factors that are currently depressing national economic growth.

The purchasing business survey now is in its nineteenth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity — higher, unchanged, or lower — on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are in a prime position to provide timely and accurate information on current business trends, thus enabling economic turning points to be spotted.

Prices paid for major purchased items continued their upward course in June and at a somewhat higher rate than in all but the first month of 1981. Yet, the increased rates in 1981 have been well under those

registered in most months of the previous three years, showing that some progress is being made in moderating the rate of inflation. Fifty-seven percent of the purchasing managers said their firm paid higher prices in June compared to May; 38 percent saw prices unchanged; while 5 percent enjoyed an overall price decrease.

Delivery time on shipments from vendors continued to stretch out at a rate consistent with the previous several months. Longer delivery times were reported by 24 percent of the firms; 13 percent got faster vendor service. This provides further evidence that the economy is operating well below its potential capacity.

Inventory levels of purchased materials dropped again, for the fourth month in a row, although the decreases have been fairly minor. Inventory reductions were reported by 35 percent of the firms, compared to the 27 percent that increased stocks. Arizona firms appear to have inventories well under control, and they are in line with operating rates.

New orders received from customers dropped in June, although the decrease was minor. The 31 percent reporting an increase in new order receipts was exceeded slightly by the 35 percent who saw fewer new orders. Demand continues to be relatively soft, and the Arizona economy is marking time as we go into the summer months.

Production also was essentially flat in June, as the 29 percent of the firms who increased output was almost matched by the 27 percent who cut production. This

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increase rate is much smaller than that enjoyed in the earlier months of the year, but it is in line with the decreased new order rate.

Employment in Arizona firms slid somewhat in June, with 22 percent of the firms adding employees, compared to the 24 percent who reduced their work force. Employment has remained relatively stable so far in 1981, with only minor increases or decreases shown in each of the past six months.

The Arizona economy has experienced a relatively slow rate of growth over the first half of the year. With a continuation of the very high interest rates, it is likely that only moderate growth will be registered over the balance of the summer.

The results of the June purchasing survey are shown in Table 1.

TABLE 1

JUNE PURCHASING SURVEY

<i>Key Indicators</i>	<i>Percent of Purchasing Managers Indicating Each Response (June compared to May)</i>		
	<i>Higher</i>	<i>Same</i>	<i>Lower</i>
Prices paid for major commodities	57	38	5
Delivery time from vendors	24	63	13
Purchased materials inventory level	27	38	35
New orders received	31	34	35
Production	29	44	27
Employment	22	54	24

Source: Purchasing Management Association of Arizona and Purchasing Management Association of Southern Arizona.

ARIZONA SALES OF ELECTRICAL POWER

By Month in Millions of KWH*

<i>Current Month:</i>	<i>Actual:</i>		<i>Percent Change Current Month From:</i>	
	<i>1981</i>	<i>1980</i>	<i>Same Month, Previous Year</i>	<i>Previous Month</i>
April	2470.1	2514.0	-1.7	+ 2.3
May	2656.7	2338.7	+ 13.6	+ 7.6

* Based on reports from major suppliers.

Arizona Construction Activity:

Quarterly Report

JAY Q. BUTLER

FIRST QUARTER, 1981

Despite surging interest rates and a sluggish economy, construction activity produced a relatively good level of performance during the initial quarter of 1981. Contrary to previous quarters, the residential sector posted an increase while the commercial and industrial sectors registered declines. Table 1 summarizes activities in several key construction segments.

During the first quarter there were positive economic signs of a growing economy, lowering inflation, and increasing optimism. Furthermore, interest rates were stable and even declining during much of the first quarter. However, toward the end of the quarter they began to increase again for the third time in little over a year. Although interest rates appeared to have peaked during the second quarter, the prime interest rate did reach 20 percent, the FHA/VA mortgage interest rate was raised to 15.5 percent, and the conventional mortgage interest rate was over 16 percent. While increasing interest rates appeared to affect activity in the latter portion of the first quarter, most of the detrimental impact will be felt during the second quarter.

Total construction activity in Arizona for the first quarter was 21,935 issued permits, valued at \$666 million. For Maricopa County, 12,517 permits valued at \$384 million were recorded. These levels of activity

are fairly comparable to the first and fourth quarters of 1980.

Residential Sector

Because it was widely held that interest rates would begin to decline, residential construction activity began to increase. Although much of the increase can be attributed to an expected economic improvement, a portion of the increase is due to a push to obtain permits before an increase in development fees in several cities of Maricopa County.

In Maricopa County, 3,698 single family permits valued at \$165 million were issued. This represents a 15 percent increase over the 3,224 permits of the fourth quarter, 1980, which were issued for a value of \$143 million. Furthermore, it shows an increase of 29 percent over a year ago when 2,864 permits were issued for \$108 million. On a month-by-month basis for 1981, there was a definite upward trend: January, 1,137 permits for \$49 million; February, 1,223 permits for \$56 million; and March, 1,338 permits for \$61 million. However, in April, as a response to negative economic factors, single-family activity declined slightly to 1,295 permits valued at \$60 million.

Due to the importance of the housing industry in Maricopa County, there is concern about when housing will return to an upward trend and a strengthening market. Figure 1 shows new-home sales, single-family permits, and commitment interest rates (a future rate based on a 25-year, 75 percent loan-to-price mortgage). A definite positive response is shown to declining or even stabilizing interest rates. It must be recognized that interest rates not only represent an economic cost,

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FIGURE I

SINGLE-FAMILY SALES, PERMITS,
AND INTEREST RATES,
MARICOPA COUNTY
1980-1981

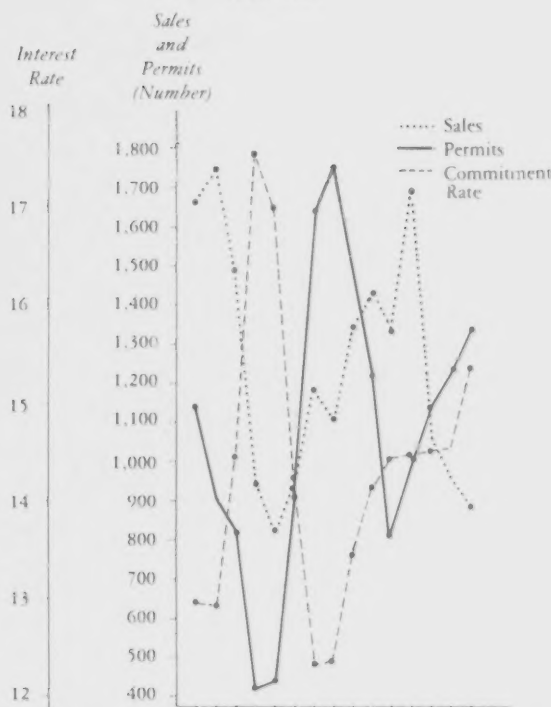


TABLE 1
ARIZONA CONSTRUCTION ACTIVITY
(Current Quarter, Previous Quarter, and One Year Ago)

	SINGLE FAMILY ¹		APARTMENTS ¹		COMMERCIAL OFFICE BUILDINGS ²		RETAIL STORES ³		INDUSTRIAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MARICOPA COUNTY										
1st Quarter, 1981	5,698	164,882,153	112	47,391,440	69	20,775,857	108	24,167,645	117	32,689,989
4th Quarter, 1980	5,224	142,502,981	97	44,644,935	83	38,250,455	125	23,960,183	135	51,515,976
1st Quarter, 1980	2,864	107,657,435	105	50,175,864	46	21,430,351	177	54,489,893	111	36,360,633
PIMA COUNTY										
1st Quarter, 1981	774	41,275,104	14	17,182,830	57	104,482,000	38	7,913,953	6	466,125
4th Quarter, 1980	1,246	68,687,499	18	25,179,422	46	22,554,600	19	3,389,430	4	270,600
1st Quarter, 1980	854	29,137,096	11	8,879,900	53	37,233,440	32	6,150,285	4	1,354,000
REST OF ARIZONA										
1st Quarter, 1981	1,118	45,075,084	12	10,090,177	25	1,157,443	81	4,421,244	22	1,485,562
4th Quarter, 1980	1,212	56,952,157	17	6,490,639	36	2,462,995	97	11,173,732	19	15,795,619
1st Quarter, 1980	1,285	46,392,747	12	960,000	30	1,776,253	86	6,361,633	13	3,233,044
ARIZONA TOTAL										
1st Quarter, 1981	5,590	251,232,341	138	74,664,447	151	126,415,300	227	36,502,842	145	54,641,676
4th Quarter, 1980	5,682	259,856,007	132	76,314,996	165	63,268,050	239	38,523,345	158	67,382,195
1st Quarter, 1980	4,981	183,187,278	117	60,015,764	129	60,440,044	295	47,061,811	128	40,947,697

¹Five or more housing units

²Office, bank, medical, and professional buildings

³Shopping centers and other mercantile buildings

its eastside suburbs: Chandler, 7 permits — \$1.5 million; Mesa, 10 permits — \$6.1 million; Phoenix, 51 permits — \$15.2 million; and Tempe, 43 permits — \$7.6 million.

Because of the effect that a single project can have on the totals (such as a \$10 million industrial project reported in Yavapai County for the fourth quarter), industrial activity can show considerable volatility in areas outside Maricopa County. Besides Pima and Maricopa counties, Apache County reported three permits valued at \$693,000; Mohave County had one permit worth \$367,640; and Yuma County registered four permits valued at \$180,390.

LOOKING AHEAD

As shown in Figure I, the level and movement of interest rates can have a definite impact on the level of new home construction and sales activity, an important sector of the construction industry. Thus, a fundamental question for over a year has been, When will interest rates decline to acceptable levels and stabilize? This movement is necessary not only to reduce the cost of

purchasing but also to project a more positive economic environment needed for consumers to make major purchases.

As long as the Federal Reserve continues the policy of combating inflation through a restrictive money policy, interest rates will remain relatively high and volatile. While there are some positive signs that interest rates should begin to decline during the rest of the year, they will not stabilize at acceptable levels until business activity softens to lower loan demand, inflation continues to move downward, and financial institutions improve their liquidity and financial positions.

Although much concern has been focused on the short-term prime interest rate and Treasury bill rate, long-term rates are not expected to decrease until sustained evidence shows that the economy is improving. The key economic concern continues to be inflation and its impact on long-term financial yields. Signs are increasing that inflation is moderating due to falling energy prices, declining housing costs, and stable food prices. While the first two factors are expected to remain stable, the main concern is the impact that unfavorable weather conditions in the United States and

other food growing areas could have on food prices. If the positive signs continue, inflation could be below the 10 percent level for the nation, and around 12 percent for the local economy.

Other areas of concern for the remainder of 1981 are Treasury borrowings and consumer confidence. A high degree of uncertainty exists concerning federal borrowing requirements. If the government must increase borrowings to support tax cuts and budget increases for defense, interest rates along a broad range will also have to increase. Consumers are not expected to give a near-term lift to business activity. According to the surveys conducted by the Conference Board, consumers foresee an improving economy and their plans concerning major purchases continued to decline through May.

Despite a lethal dose of high interest rates, the Arizona construction industry did not roll over and play dead. This was especially evident in the single-family market. However, much of the permit activity was in

response to expected lower interest rates. Since interest rates have not declined as expected, single-family construction activity should not increase significantly until later this year, or when interest rates are lowered and more stable.

Although the economy is still uncertain, increasing signs of improvement are evident, which should benefit the construction industry. As noted in the annual report, 1981 represents a transitional market, bridging the recession market and a growth market. Because this represents change, market and economic activity will not be consistent until later in 1981. Since no definitive trends exist, some caution must be allowed when analyzing the current and future real estate market. Before construction activity can really escalate, basic economic factors, especially inflation and interest rates, must stabilize at acceptable levels. Once there is sustained evidence of economic stability, construction activity will begin to increase.

Arizona New Housing Starts: Quarterly Report

FIRST QUARTER, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Family	5 or More	Total Housing Units
APACHE COUNTY	22	3	—	—	1	49
Eagar	6	—	—	—	—	6
St. Johns	—	3	—	—	—	3
Springerville	6	—	—	—	1	30
Unincorporated	10	—	—	—	—	10
COCHISE COUNTY	76	71	1	—	1	249
Benson	5	4	—	—	—	9
Bisbee	1	—	—	—	—	1
Douglas	5	—	—	—	—	5
Huachuca City	—	—	—	—	—	—
Sierra Vista	21	9	—	—	1	130
Tombstone	—	2	1	—	—	4
Unincorporated	43	54	—	—	—	97
Willcox	1	2	—	—	—	3
COCONINO COUNTY	108	72	1	3	—	194
Flagstaff	39	—	1	3	—	53
Fredonia	1	3	—	—	—	4
Page	11	28	—	—	—	39
Unincorporated	57	39	—	—	—	96
Williams	—	2	—	—	—	2
GILA COUNTY	72	33	3	—	—	111
Globe	2	—	—	—	—	2
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	27	13	3	—	—	46
Unincorporated	43	20	—	—	—	63
GRAHAM COUNTY	25	29	1	1	—	60
Pima	—	2	—	—	—	2
Safford	10	—	1	1	—	16
Thatcher	—	4	—	—	—	4
Unincorporated	15	23	—	—	—	38
GREENLEE COUNTY	4	—	—	—	—	4
Clifton	1	—	—	—	—	1
Duncan	—	—	—	—	—	—
Unincorporated	3	—	—	—	—	3
MARICOPA COUNTY	3,698	618	38	55	112	6,690
Avondale	1	4	—	—	—	5
Buckeye	4	1	—	—	—	5
Chandler	612	—	—	20	—	692
El Mirage	1	1	—	—	—	2
Gila Bend	2	—	—	—	—	2
Gilbert	23	3	—	2	—	34
Glendale	269	—	—	—	8	319
Goodyear	—	—	—	—	—	—
Guadalupe	—	1	—	—	—	1
Mesa	446	—	18	6	11	832
Paradise Valley	14	—	—	—	—	14
Peoria	86	—	—	—	—	86
Phoenix	1,231	103	10	11	37	2,435
Scottsdale	204	—	—	1	—	207
Surprise	1	8	—	—	—	9
Tempe	173	—	4	14	55	898
Tolleson	1	—	1	—	—	3
Unincorporated	625	497	5	1	1	1,141
Wickenburg	4	—	—	—	—	4
Youngtown	1	—	—	—	—	1

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Family	5 or More	Total Housing Units
MOHAVE COUNTY	191	272	1	2	2	488
Kingman City	24	2	—	—	—	26
Kingman Area	24	82	—	—	2	123
Lake Havasu City	78	6	1	—	—	86
Lake Havasu Area	—	10	—	—	—	10
Mohave Valley N.	31	90	—	2	—	127
Mohave Valley S.	19	49	—	—	—	68
Dolan Springs	3	19	—	—	—	22
Sacramento Valley	6	8	—	—	—	14
Mohave General	6	6	—	—	—	12
NAVAJO COUNTY	74	46	1	—	—	122
Holbrook	2	—	—	—	—	2
Show Low	5	6	—	—	—	11
Snowflake	12	—	—	—	—	12
Taylor	3	11	—	—	—	14
Unincorporated	43	28	1	—	—	73
Winslow	9	1	—	—	—	10
PIMA COUNTY	774	608	24	12	14	2,284
Marana	1	5	—	—	—	6
Oro Valley	1	—	—	—	—	1
South Tucson	1	—	—	—	—	1
Tucson	225	133	19	12	12	884
Unincorporated	546	470	5	—	2	1,392
PINAL COUNTY	125	550	—	5	—	695
Apache Junction	32	59	—	1	—	95
Casa Grande	18	—	—	—	—	18
Coolidge	—	5	—	—	—	5
Eloy	—	—	—	—	—	—
Florence	—	—	—	—	—	—
Kearny	2	1	—	—	—	3
Mammoth	—	3	—	—	—	3
Superior	—	—	—	—	—	—
Unincorporated	73	482	—	4	—	571
SANTA CRUZ COUNTY	19	1	—	1	—	24
Nogales	1	—	—	—	—	1
Patagonia	1	1	—	1	—	6
Unincorporated	17	—	—	—	—	17
YAVAPAI COUNTY	275	136	6	8	1	626
Chino Valley	11	12	—	—	—	23
Clarkdale	4	—	—	—	—	4
Cottonwood	14	9	—	—	—	23
Jerome	—	—	—	—	—	—
Prescott	47	2	2	5	—	73
Prescott Valley	37	18	3	1	—	65
Unincorporated	162	95	1	2	1	438
YUMA COUNTY	127	67	3	10	7	278
Parker	—	—	—	—	—	—
Somerton	14	1	—	—	—	15
Unincorporated	75	66	—	—	1	147
Wellton	—	—	—	—	—	—
Yuma	38	—	3	10	6	116
Total, Maricopa Co., 1st Quarter 1981	3,698	618	38	55	112	6,690
Total, Maricopa Co., 1st Quarter, 1980	2,864	560	28	42	105	6,326
Percent Change	29	10	35	30	6	5
Total, Arizona, 1st Quarter 1981	5,590	2,506	79	97	138	11,874
Total, Arizona, 1st Quarter 1980	4,981	1,901	60	84	117	10,536
Percent Change	12	31	31	15	17	12

Arizona Building Permits: Quarterly Report

	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
FIRST QUARTER, 1981										
APACHE COUNTY	32	384,450	4	57,000	3	693,000	3	10,200	42	1,144,650
Eagar	7	248,000	1	57,000	3	693,000	—	—	11	998,000
St. Johns	8	N/C	—	—	—	—	1	N/C	9	N/C
Springerville	6	N/C	3	—	—	—	—	—	9	N/C
Unincorporated	11	136,450	—	—	—	—	2	10,200	13	146,650
COCHISE COUNTY	272	4,576,758	19	2,257,636	3	27,200	247	1,368,464	541	8,230,058
Benson	15	287,500	1	250,000	1	24,000	9	41,600	26	603,100
Bisbee	19	60,250	—	—	—	—	—	—	19	60,250
Douglas	24	368,473	1	31,824	—	—	38	115,931	63	516,228
Huachuca City	10	13,571	—	—	1	2,000	—	—	11	15,571
Sierra Vista	68	1,108,586	4	1,718,512	—	—	156	318,049	228	3,145,147
Tombstone	11	43,550	2	46,000	—	—	4	2,350	17	91,900
Unincorporated	113	2,634,828	9	161,300	1	1,200	35	887,884	158	3,585,212
Willcox	12	60,000	2	50,000	—	—	5	2,650	19	112,650
COCONINO COUNTY	271	5,974,607	24	803,147	3	76,100	76	746,298	374	7,600,152
Flagstaff	67	2,499,683	16	505,898	3	76,100	47	320,554	133	3,402,235
Fredonia	6	70,000	—	—	—	—	2	500	8	70,500
Page	60	852,762	3	14,300	—	—	6	328,200	69	1,195,262
Unincorporated	129	2,501,644	5	282,949	—	—	12	88,119	146	2,872,712
Williams	9	50,518	—	—	—	—	9	8,925	18	59,443
GILA COUNTY	193	2,527,693	6	135,000	—	—	73	366,651	272	3,029,344
Globe	16	50,600	—	—	—	—	21	112,700	37	163,300
Hayden	2	1,200	—	—	—	—	2	700	4	1,900
Miami	11	36,590	—	—	—	—	1	8,000	12	44,590
Payson	61	652,553	3	17,000	—	—	35	21,851	99	691,404
Unincorporated	103	1,786,750	3	118,000	—	—	14	223,400	120	2,128,150
GRAHAM COUNTY	114	1,403,189	8	171,800	—	—	8	30,885	130	1,605,874
Pima	2	3,500	—	—	—	—	—	—	2	3,500
Safford	33	444,938	6	96,800	—	—	5	4,885	44	546,623
Thatcher	18	130,980	—	—	—	—	2	23,000	20	153,980
Unincorporated	61	823,771	2	75,000	—	—	1	3,000	64	901,771
GREENLEE COUNTY	4	94,655	1	1,000	—	—	—	—	5	95,655
Clifton	1	N/C	—	—	—	—	—	—	1	N/C
Duncan	—	—	—	—	—	—	—	—	—	—
Unincorporated	3	94,655	1	1,000	—	—	—	—	4	95,655
MARICOPA COUNTY	6,635	177,459,984	401	101,976,154	117	32,689,989	5,364	71,705,189	12,517	583,831,316
Avondale	7	32,880	1	34,000	—	—	34	101,834	42	168,714
Buckeye	13	113,478	2	135,000	—	—	3	3,504	18	251,982
Chandler	685	19,305,168	23	1,962,320	7	1,534,840	759	2,951,279	1,474	25,753,607
El Mirage	9	38,154	—	—	—	—	7	24,924	16	63,078
Gila Bend	4	100,900	—	—	—	—	1	500	5	101,400
Gilbert	56	1,201,395	3	221,880	1	10,000	54	68,321	114	1,501,596
Glendale	346	8,336,960	38	3,919,700	4	99,000	553	4,547,996	941	16,903,656
Goodyear	3	5,450	1	279,930	—	—	26	521,233	30	806,613
Guadalupe	8	48,880	1	N/C	—	—	2	2,592	11	51,472
Mesa	572	18,862,811	43	19,697,768	10	6,119,868	861	11,038,096	1,486	55,718,543
Paradise Valley	64	2,607,186	—	—	—	—	42	306,160	106	2,913,346
Peoria	106	2,112,352	9	1,257,092	—	—	149	1,548,619	264	4,918,063
Phoenix	2,190	66,938,091	128	50,503,676	51	15,271,281	1,717	20,924,029	4,086	153,637,077
Scottsdale	318	15,016,644	24	4,305,038	—	—	445	2,980,635	787	22,302,317
Surprise	20	99,250	—	—	—	—	5	48,400	25	147,650
Tempe	295	10,810,800	94	14,153,800	43	7,655,000	193	5,292,500	625	37,912,100
Tolleson	21	47,445	2	33,000	—	—	4	12,555	27	93,000
Unincorporated	1,845	31,528,005	31	5,429,750	1	2,000,000	503	21,298,142	2,380	60,255,897
Wickenburg	6	170,500	1	43,200	—	—	1	25,000	8	238,700
Youngtown	67	83,635	—	—	—	—	5	8,870	72	92,505

Arizona Building Permits: Quarterly Report (Continued)

FIRST QUARTER, 1981	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE COUNTY	825	11,978,493	57	3,353,824	1	367,640	692	3,456,289	1,575	19,156,246
Kingman City	61	966,104	13	1,027,740	—	—	21	35,082	95	2,028,926
Kingman Area	162	1,879,725	5	457,760	—	—	142	142,689	309	2,480,174
Lake Havasu City	129	3,859,047	11	718,312	—	—	74	2,342,262	214	6,919,621
Lake Havasu Area	21	166,638	1	17,280	—	—	32	199,670	54	383,588
Mohave Valley N.	242	2,685,317	17	784,024	—	—	237	431,968	496	3,901,309
Mohave Valley S.	130	1,518,890	6	263,016	—	—	125	239,184	261	2,021,090
Dolan Springs	40	340,847	2	43,836	—	—	29	34,172	71	418,855
Sacramento Valley	23	302,255	2	41,856	—	—	23	19,158	48	63,269
Mohave General	17	259,670	—	—	1	367,640	9	12,104	27	639,414
NAVAJO COUNTY	182	2,915,742	11	300,653	2	59,532	15	50,644	210	3,326,571
Holbrook	4	81,500	—	—	—	—	2	12,000	6	93,500
Show Low	13	165,783	4	56,244	2	59,532	—	—	19	281,559
Snowflake	12	N/C	—	—	—	—	—	—	12	N/C
Taylor	15	161,000	2	90,000	—	—	1	7,000	18	258,000
Unincorporated	117	2,041,439	5	154,409	—	—	8	28,944	130	2,224,812
Winslow	21	466,000	—	—	—	—	4	2,700	25	468,700
PIMA COUNTY	2,230	46,512,853	130	131,435,127	6	466,125	1,373	11,293,357	3,739	189,707,462
Marana	8	N/C	1	N/C	—	—	3	N/C	12	N/C
Oro Valley	2	159,000	—	—	—	—	—	—	2	159,000
South Tucson	31	73,960	2	42,688	4	132,825	10	9,300	47	258,773
Tucson	795	12,232,546	72	16,883,139	2	333,300	659	8,170,255	1,528	37,619,240
Unincorporated	1,394	34,047,347	55	114,509,300	—	—	701	3,113,802	2,150	151,670,449
PINAL COUNTY	836	5,994,210	15	579,950	—	—	196	574,486	1,047	7,148,646
Apache Junction	128	1,980,893	3	172,163	—	—	93	115,087	224	2,268,143
Casa Grande	26	921,965	—	—	—	—	11	98,179	37	1,020,144
Coolidge	43	109,513	5	67,000	—	—	7	21,300	55	197,813
Eloy	11	15,753	1	120,000	—	—	5	2,450	17	138,203
Florence	2	1,500	2	787	—	—	6	17,870	10	20,157
Kearny	6	95,400	—	—	—	—	—	—	6	95,400
Mammoth	4	12,000	—	—	—	—	—	—	4	12,000
Superior	3	800	—	—	—	—	7	1,736	10	2,536
Unincorporated	613	2,856,386	4	220,000	—	—	67	317,864	684	3,394,250
SANTA CRUZ COUNTY	38	1,145,734	6	304,600	1	5,000	17	106,222	62	1,561,556
Nogales	11	39,175	—	—	—	—	10	66,535	21	105,710
Patagonia	5	62,425	3	60,600	1	5,000	2	190	11	128,215
Unincorporated	22	1,044,134	3	244,000	—	—	5	39,497	30	1,327,631
YAVAPAI COUNTY	639	16,548,944	40	9,912,132	5	76,700	249	1,231,432	933	27,769,208
Chino Valley	36	746,340	4	31,300	1	5,000	2	3,500	43	786,140
Clarkdale	15	183,060	—	—	1	17,500	1	400	17	200,960
Cottonwood	57	685,178	4	275,000	1	40,000	23	55,288	85	1,055,466
Jerome	2	4,400	2	4,700	—	—	2	2,800	6	11,900
Prescott	121	2,914,272	9	773,380	—	—	112	450,487	242	4,138,139
Prescott Valley	71	1,389,768	5	181,872	—	—	1	139,776	77	1,711,416
Unincorporated	337	10,625,926	16	8,645,880	2	14,200	108	579,181	463	19,865,187
YUMA COUNTY	350	8,098,972	31	2,580,796	4	180,390	103	1,308,480	488	12,168,638
Parker	—	—	—	—	1	44,000	13	419,400	14	463,400
Somerton	19	696,220	—	—	—	—	4	4,700	23	700,920
Unincorporated	208	5,137,800	13	721,116	—	—	21	208,175	242	6,067,091
Wellton	—	—	—	—	—	—	3	46,000	3	46,000
Yuma	123	2,264,952	18	1,859,680	3	136,390	62	630,205	206	4,891,227
Total, Maricopa County 1st Quarter, 1981	6,635	177,459,984	401	101,976,154	117	32,689,989	5,364	71,705,189	12,517	383,831,316
Total, Maricopa County 1st Quarter, 1980	6,113	121,018,876	475	123,422,891	111	36,360,653	5,635	65,939,623	12,334	346,742,043
Percent Change	8	46	-15	-17	5	-10	-4	8	1	10
Total, Arizona 1st Quarter, 1981	12,621	285,616,284	753	253,868,819	145	34,641,676	8,416	92,248,597	21,935	666,375,376
Total, Arizona 1st Quarter, 1980	11,825	216,387,616	840	191,531,552	128	40,947,697	9,010	95,095,410	21,803	543,962,275
Percent Change	6	31	-10	32	13	-15	-6	-2	—	22

*Includes mobile homes N/C: Not collected.

Arizona New Housing Starts: Monthly Report

APRIL, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Family	5 or More	Total Housing Units
APACHE COUNTY	10	4	—	—	—	14
Eagar	3	—	—	—	—	3
St. Johns	1	4	—	—	—	5
Springerville	3	—	—	—	—	3
Unincorporated	3	—	—	—	—	3
COCHISE COUNTY	25	32	—	—	1	101
Benson	—	2	—	—	—	2
Bisbee	—	—	—	—	—	—
Douglas	2	—	—	—	—	2
Huachuca City	—	—	—	—	1	44
Sierra Vista	4	3	—	—	—	7
Tombstone	—	1	—	—	—	1
Unincorporated	17	26	—	—	—	43
Willcox	2	—	—	—	—	2
COCONINO COUNTY	81	67	10	—	—	168
Flagstaff	30	—	10	—	—	50
Fredonia	—	1	—	—	—	1
Page	3	14	—	—	—	17
Unincorporated	48	51	—	—	—	99
Williams	—	1	—	—	—	1
GILA COUNTY	40	27	—	—	—	67
Globe	4	—	—	—	—	4
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	14	12	—	—	—	26
Unincorporated	22	15	—	—	—	37
GRAHAM COUNTY	10	12	—	—	—	22
Pima	—	—	—	—	—	—
Safford	2	—	—	—	—	2
Thatcher	3	—	—	—	—	3
Unincorporated	5	12	—	—	—	17
GREENLEE COUNTY	3	—	—	—	—	3
Clifton	—	—	—	—	—	—
Duncan	—	—	—	—	—	—
Unincorporated	3	—	—	—	—	3
MARICOPA COUNTY	1,295	160	14	31	24	2,498
Avondale	1	—	—	10	—	41
Buckeye	—	1	—	—	—	1
Chandler	75	—	—	11	—	119
El Mirage	—	—	—	—	—	—
Gila Bend	—	—	—	—	—	—
Gilbert	10	—	1	—	—	12
Glendale	70	—	—	1	—	74
Goodyear	—	—	—	—	—	—
Guadalupe	1	—	—	—	—	1
Mesa	174	—	5	1	3	312
Paradise Valley	9	—	—	—	—	9
Peoria	24	—	3	—	—	30
Phoenix	383	30	4	5	9	989
Scottsdale	207	—	—	—	1	267
Surprise	1	2	—	—	—	3
Tempe	34	—	—	2	11	202
Tolleson	1	—	—	—	—	1
Unincorporated	301	127	1	1	—	433
Wickenburg	3	—	—	—	—	3
Youngtown	1	—	—	—	—	1

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Family	5 or More	Total Housing Units
MOHAVE COUNTY	65	90	—	—	5	200
Kingman City	12	1	—	—	—	13
Kingman Area	11	27	—	—	—	38
Lake Havasu City	27	3	—	—	5	75
Lake Havasu Area	—	4	—	—	—	4
Mohave Valley N.	8	33	—	—	—	41
Mohave Valley S.	4	17	—	—	—	21
Dolan Springs	—	1	—	—	—	1
Sacramento Valley	1	3	—	—	—	4
Mohave General	2	1	—	—	—	3
NAVAJO COUNTY	73	23	—	—	—	96
Holbrook	—	—	—	—	—	—
Show Low	12	5	—	—	—	17
Snowflake	9	—	—	—	—	9
Taylor	5	5	—	—	—	10
Unincorporated	46	13	—	—	—	59
Winslow	1	—	—	—	—	1
PIMA COUNTY	238	120	7	8	1	410
Marana	—	—	—	—	—	—
Oro Valley	2	—	—	—	—	2
South Tucson	—	—	—	—	—	—
Tucson	70	67	7	8	1	189
Unincorporated	166	53	—	—	—	219
PINAL COUNTY	49	60	—	1	—	112
Apache Junction	11	29	—	—	—	40
Casa Grande	9	—	—	—	—	9
Coolidge	2	2	—	—	—	4
Eloy	—	—	—	—	—	—
Florence	—	—	—	—	—	—
Kearny	—	1	—	—	—	1
Mammoth	1	—	—	—	—	1
Superior	—	—	—	—	—	—
Unincorporated	23	28	—	1	—	57
SANTA CRUZ COUNTY	12	—	1	—	—	14
Nogales	4	—	—	—	—	4
Patagonia	—	—	1	—	—	2
Unincorporated	8	—	—	—	—	8
YAVAPAI COUNTY	101	58	4	1	1	176
Chino Valley	5	9	—	—	—	14
Clarkdale	—	1	—	—	—	1
Cottonwood	1	2	—	—	—	3
Jerome	—	—	—	—	—	—
Prescott	16	—	1	1	—	22
Prescott Valley	12	6	1	—	—	20
Unincorporated	67	40	2	—	1	116
YUMA COUNTY	50	54	—	5	1	131
Parker	1	—	—	—	—	1
Somerton	7	—	—	—	—	7
Unincorporated	32	51	—	—	—	83
Wellton	—	—	—	—	—	—
Yuma	10	3	—	5	1	40
Total, Maricopa Co., April 1981	1,295	160	14	31	24	2,498
Total, Maricopa Co., April 1980	446	142	3	14	15	1,592
Percent Change	190	12	366	121	59	56
Total, Arizona, April 1981	2,052	707	36	46	33	4,012
Total, Arizona, April 1980	1,028	647	18	26	19	2,782
Percent Change	99	9	100	76	73	44

Arizona New Housing Starts: Monthly Report

MAY, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Family	5 or More	Total Housing Units
APACHE COUNTY	19	1	—	—	—	20
Eagar	6	—	—	—	—	6
St. Johns	—	1	—	—	—	1
Springerville	2	—	—	—	—	2
Unincorporated	11	—	—	—	—	11
COCHISE COUNTY	21	38	—	—	2	83
Benson	—	—	—	—	—	—
Bisbee	—	—	—	—	—	—
Douglas	3	—	—	—	2	27
Huachuca City	—	—	—	—	—	—
Sierra Vista	1	29	—	—	—	30
Tombstone	1	—	—	—	—	1
Unincorporated	14	9	—	—	—	23
Willcox	2	—	—	—	—	2
COCONINO COUNTY	80	45	3	—	1	137
Flagstaff	25	—	3	—	—	31
Fredonia	—	2	—	—	—	2
Page	4	6	—	—	—	10
Unincorporated	49	35	—	—	1	90
Williams	2	2	—	—	—	4
GILA COUNTY	37	25	—	—	—	62
Globe	1	—	—	—	—	1
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	10	13	—	—	—	23
Unincorporated	26	12	—	—	—	38
GRAHAM COUNTY	10	12	—	2	—	30
Pima	—	2	—	—	—	2
Safford	2	—	—	2	—	10
Thatcher	1	2	—	—	—	3
Unincorporated	7	8	—	—	—	15
GREENLEE COUNTY	1	—	—	—	—	1
Clifton	1	—	—	—	—	1
Duncan	—	—	—	—	—	—
Unincorporated	—	—	—	—	—	—
MARICOPA COUNTY	2,120	114	9	24	46	5,542
Avondale	—	—	—	—	—	—
Buckeye	—	—	—	—	—	—
Chandler	15	—	—	—	—	15
El Mirage	1	1	—	—	—	2
Gila Bend	—	—	—	—	—	—
Gilbert	23	—	—	—	—	23
Glendale	71	—	—	—	—	71
Goodyear	—	—	—	—	—	—
Guadalupe	—	—	—	—	—	—
Mesa	128	—	2	9	5	375
Paradise Valley	16	—	—	—	—	16
Peoria	21	—	—	—	—	21
Phoenix	1,305	17	3	5	41	4,335
Scottsdale	64	—	—	—	—	64
Surprise	1	1	—	—	—	2
Tempe	44	—	4	9	—	88
Tolleson	1	—	—	—	—	1
Unincorporated	429	95	—	1	—	528
Wickenburg	1	—	—	—	—	1
Youngtown	—	—	—	—	—	—

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Family	5 or More	Total Housing Units
MOHAVE COUNTY	51	98	1	—	1	163
Kingman City	7	—	—	—	—	7
Kingman Area	7	28	—	—	—	35
Lake Havasu City	19	—	1	—	—	21
Lake Havasu Area	—	2	—	—	—	2
Mohave Valley N.	8	32	—	—	1	52
Mohave Valley S.	—	28	—	—	—	28
Dolan Springs	2	2	—	—	—	4
Sacramento Valley	5	6	—	—	—	11
Mohave General	3	—	—	—	—	3
NAVAJO COUNTY	77	31	—	—	—	108
Holbrook	1	—	—	—	—	1
Shoow Low	3	6	—	—	—	9
Snowflake	4	—	—	—	—	4
Taylor	1	—	—	—	—	1
Unincorporated	66	25	—	—	—	91
Winslow	2	—	—	—	—	2
PIMA COUNTY	144	108	10	7	4	373
Marana	—	2	1	—	—	4
Oro Valley	—	—	—	—	—	—
South Tucson	1	—	1	—	—	3
Tucson	53	59	8	7	4	229
Unincorporated	90	47	—	—	—	137
PINAL COUNTY	54	51	2	1	—	113
Apache Junction	16	11	2	—	—	31
Casa Grande	12	—	—	—	—	12
Coolidge	—	3	—	—	—	3
Eloy	—	—	—	—	—	—
Florence	—	—	—	—	—	—
Kearny	1	—	—	—	—	1
Mammoth	3	—	—	—	—	3
Superior	—	—	—	—	—	—
Unincorporated	22	37	—	1	—	63
SANTA CRUZ COUNTY	17	1	—	—	—	18
Nogales	8	—	—	—	—	8
Patagonia	—	1	—	—	—	1
Unincorporated	9	—	—	—	—	9
YAVAPAI COUNTY	88	48	—	5	1	166
Chino Valley	—	7	—	—	—	7
Clarkdale	3	—	—	—	—	3
Cottonwood	1	1	—	—	—	2
Jerome	—	—	—	—	—	—
Prescott	14	3	—	3	1	41
Prescott Valley	10	5	—	1	—	18
Unincorporated	60	32	—	1	—	95
YUMA COUNTY	31	39	—	2	4	108
Parker	—	—	—	—	—	—
Somerton	11	—	—	—	—	11
Unincorporated	16	34	—	—	—	50
Wellton	—	—	—	—	—	—
Yuma	4	5	—	2	4	47
Total, Maricopa Co., May 1981	2,120	114	9	24	46	5,542
Total, Maricopa Co., May 1980	435	142	20	47	8	948
Percent Change	387	-19	-54	-48	475	484
Total, Arizona, May 1981	2,750	611	25	41	59	6,924
Total, Arizona, May 1980	906	647	36	52	20	2,131
Percent Change	203	-5	-30	-21	194	224

APRIL, 1981

Arizona Building Permits: Monthly Report

	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE CO.	15	229,301	4	60,000	—	—	3	27,500	22	316,801
Eagar	3	122,500	1	50,000	—	—	—	—	4	172,500
St. Johns	5	N/C	—	—	—	—	1	N/C	6	N/C
Springerville	3	N/C	2	N/C	—	—	—	—	5	N/C
Unincorporated	4	106,801	1	10,000	—	—	2	27,500	7	144,301
COCHISE CO.	127	1,834,063	6	1,225,724	—	—	102	295,173	235	3,354,960
Benson	9	25,875	1	83,000	—	—	2	3,025	12	111,900
Bisbee	11	24,700	—	—	—	—	1	13,955	12	38,655
Douglas	10	270,332	—	—	—	—	17	37,346	27	307,678
Huachuca City	9	6,673	1	1,040,890	—	—	—	—	10	1,047,563
Sierra Vista	21	170,669	1	40,000	—	—	70	138,388	92	349,057
Tombstone	4	16,500	2	21,834	—	—	1	250	7	38,584
Unincorporated	59	1,254,314	1	40,000	—	—	9	100,439	69	1,394,753
Willcox	4	65,000	—	—	—	—	2	1,770	6	66,770
COCONINO CO.	218	5,484,141	8	556,896	—	—	45	117,410	271	6,158,447
Flagstaff	51	2,949,716	5	169,300	—	—	26	42,656	82	3,161,672
Fredonia	2	2,000	—	—	—	—	1	500	3	2,500
Page	26	202,389	—	—	—	—	—	—	26	202,389
Unincorporated	135	2,312,586	3	387,596	—	—	6	62,365	144	2,762,547
Williams	4	17,450	—	—	—	—	12	11,889	16	29,339
GILA CO.	98	1,348,272	5	76,864	—	—	52	80,240	155	1,505,376
Globe	7	99,600	—	—	—	—	8	16,405	15	116,005
Hayden	—	—	—	—	—	—	3	3,175	3	3,175
Miami	4	24,000	—	—	—	—	—	—	4	24,000
Payson	36	279,972	3	63,864	—	—	38	39,078	77	382,914
Unincorporated	51	944,700	2	13,000	—	—	3	21,582	56	979,282
GRAHAM CO.	35	650,681	—	—	—	—	5	39,100	40	689,781
Pima	—	—	—	—	—	—	—	—	—	—
Safford	8	97,240	—	—	—	—	4	36,900	12	134,140
Thatcher	8	201,710	—	—	—	—	—	—	8	201,710
Unincorporated	19	351,731	—	—	—	—	1	2,200	20	353,931
GREENLEE CO.	3	86,000	—	—	—	—	2	15,000	5	101,000
Clifton	—	—	—	—	—	—	1	N/C	1	N/C
Duncan	—	—	—	—	—	—	1	15,000	1	15,000
Unincorporated	3	86,000	—	—	—	—	—	—	3	86,000
MARICOPA CO.	2,277	64,599,152	156	45,800,504	49	7,439,541	2,143	17,192,268	4,625	135,031,465
Avondale	6	34,050	10	630,000	—	—	5	14,200	21	678,250
Buckeye	2	800	—	—	1	50,000	4	11,772	7	62,572
Chandler	102	2,016,879	15	2,456,520	2	155,500	185	661,829	304	5,290,728
El Mirage	4	6,500	—	—	—	—	8	125,900	7	132,400
Gila Bend	—	—	2	12,000	—	—	5	91,800	7	103,800
Gilbert	12	499,835	—	—	—	—	10	65,695	31	565,530
Glendale	110	2,553,470	13	1,163,540	—	—	248	895,455	371	4,612,465
Goodyear	—	—	—	—	4	721,200	21	76,803	25	798,003
Guadalupe	1	12,480	—	—	—	—	—	—	1	12,480
Mesa	220	7,517,812	17	4,950,252	1	129,000	344	2,056,174	582	14,653,238
Paradise Valley	27	1,361,908	—	—	—	—	28	175,239	55	1,537,147
Peoria	35	642,000	1	96,000	—	—	37	69,956	73	807,956
Phoenix	717	19,635,926	31	21,991,896	21	3,218,641	742	8,707,030	1,511	53,553,493
Scottsdale	249	12,748,232	13	6,565,796	—	—	198	1,628,199	460	20,942,227
Surprise	8	42,900	—	—	—	—	4	9,950	12	52,850
Tempe	85	2,502,500	32	6,777,800	19	1,965,200	94	1,181,400	230	12,426,900
Tolleson	6	29,290	—	—	—	—	7	10,563	13	39,853
Unincorporated	672	14,785,055	22	1,156,700	1	1,200,000	198	1,380,303	893	18,522,058
Wickenburg	3	150,000	—	—	—	—	—	—	3	150,000
Youngtown	18	59,515	—	—	—	—	1	30,000	19	89,515

Arizona Building Permits: Monthly Report (Continued)

APRIL, 1981	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE CO.	255	3,765,460	33	2,152,389	—	—	212	593,175	500	6,511,024
Kingman City	23	444,441	2	5,840	—	—	10	62,367	35	512,648
Kingman Area	60	737,615	2	56,256	—	—	53	61,924	115	855,795
Lake Havasu City	38	1,120,580	9	1,497,191	—	—	19	98,305	66	2,716,076
Lake Havasu Area	5	54,632	—	—	—	—	5	17,656	10	72,288
Mohave Valley N.	76	863,869	11	373,302	—	—	77	130,003	164	1,367,174
Mohave Valley S.	38	376,893	8	200,120	—	—	31	45,806	77	622,819
Dolan Springs	1	13,720	—	—	—	—	1	650	2	14,370
Sacramento Valley	8	59,182	—	—	—	—	11	16,404	19	75,586
Mohave Co. General	6	94,528	1	19,680	—	—	5	160,060	12	274,268
NAVAJO CO.	120	2,560,876	3	275,209	—	—	7	143,549	130	2,979,634
Holbrook	1	16,000	1	130,000	—	—	—	—	2	146,000
Show Low	17	436,705	1	121,800	—	—	1	124,800	19	683,305
Snowflake	9	N/C	—	—	—	—	—	—	9	N/C
Taylor	11	242,000	—	—	—	—	1	2,000	12	244,000
Unincorporated	75	1,794,071	1	23,409	—	—	5	16,749	81	1,834,229
Winslow	7	72,100	—	—	—	—	—	—	7	72,100
PIMA CO.	675	16,128,282	43	9,799,780	2	185,800	565	4,047,493	1,285	30,161,355
Marana	—	—	1	N/C	—	—	—	—	1	N/C
Oro Valley	2	155,000	—	—	—	—	—	—	2	155,000
South Tucson	12	71,896	—	—	—	—	1	—	13	71,896
Tucson	321	4,547,386	27	4,481,280	2	185,800	266	2,588,633	616	11,803,099
Unincorporated	340	11,354,000	15	5,318,500	—	—	298	1,458,860	653	18,131,360
PINAL CO.	155	2,215,402	3	215,000	3	59,772	96	352,010	257	2,842,184
Apache Jct.	44	816,448	2	155,000	—	—	51	105,381	97	1,076,829
Casa Grande	19	444,885	—	—	3	59,772	11	113,148	33	617,805
Coolidge	16	146,400	—	—	—	—	3	16,500	19	162,900
Eloy	3	8,324	—	—	—	—	2	11,600	5	19,924
Florence	1	300	—	—	—	—	1	900	2	1,200
Kearny	2	1,500	—	—	—	—	—	—	2	1,500
Mammoth	2	N/C	—	—	—	—	—	—	2	N/C
Superior	6	40,400	—	—	—	—	3	2,000	9	42,400
Unincorporated	62	757,145	1	60,000	—	—	26	102,481	88	919,626
SANTA CRUZ CO.	18	593,205	—	—	2	225,000	—	44,464	46	862,669
Nogales	9	260,025	—	—	—	—	20	5,150	29	265,175
Patagonia	1	21,000	—	—	—	—	2	4,500	3	571,994
Unincorporated	8	312,180	—	—	2	225,000	4	34,814	14	25,500
YAVAPAI CO.	252	10,273,912	7	828,660	1	16,000	89	208,624	349	11,327,196
Chino Valley	19	280,453	1	25,000	—	—	5	3,400	25	308,853
Clarkdale	1	14,600	—	—	—	—	—	—	1	14,600
Cottonwood	18	74,901	1	80,000	—	—	2	4,805	21	159,706
Jerome	1	100	—	—	—	—	2	3,000	3	3,100
Prescott	44	945,350	2	176,460	—	—	41	97,584	87	1,219,194
Prescott Valley	21	422,086	—	—	1	16,000	—	—	22	438,086
Unincorporated	148	8,536,422	3	547,200	—	—	39	100,035	190	9,183,657
YUMA CO.	181	3,646,963	15	1,500,292	1	244,560	39	638,813	236	6,030,628
Parker	2	31,160	2	45,000	—	—	1	1,000	5	77,160
Somerton	8	328,600	1	8,400	—	—	—	—	9	337,000
Unincorporated	112	2,642,375	2	144,720	1	244,560	12	330,346	127	3,362,001
Wellton	1	2,000	1	5,000	—	—	—	—	2	7,000
Yuma	58	642,828	9	1,297,172	—	—	26	307,467	93	2,247,467
Total Maricopa Co. April, 1981	2,277	64,599,152	156	45,800,504	49	7,439,541	2,143	17,192,268	4,625	135,031,465
Total Maricopa Co. April, 1980	1,296	20,236,121	304	50,080,988	33	6,870,552	1,943	20,954,421	3,576	100,142,082
Percent Change	75	219	-48	-8	48	8	10	-17	29	34
Total Arizona, April, 1981	4,429	113,415,710	233	62,491,318	58	8,170,673	3,386	23,794,819	8,156	207,872,520
Total Arizona, April, 1980	3,718	50,468,088	515	64,218,002	41	3,479,776	2,966	31,210,932	7,240	155,376,798
Percent Change	19	124	-45	-2	41	-13	14	-23	12	33

*Includes mobile homes N/C: Not collected

Arizona Building Permits: Monthly Report

MAY, 1981	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE COUNTY	21	509,262	1	—	—	—	—	—	22	509,262
Eagar	6	221,000	—	—	—	—	—	—	6	221,000
St. Johns	1	N/C	—	—	—	—	—	—	1	N/C
Springerville	2	N/C	1	N/C	—	—	—	—	3	N/C
Unincorporated	12	288,262	—	—	—	—	—	—	12	288,262
COCHISE COUNTY	125	1,445,373	8	950,300	1	10,000	118	278,641	252	2,684,314
Benson	6	20,460	—	—	—	—	3	850	9	21,310
Bisbee	8	16,900	—	—	—	—	1	3,000	9	19,900
Douglas	12	234,175	2	700,200	—	—	23	54,139	37	988,514
Huachuca City	6	8,310	—	—	1	10,000	—	—	7	18,310
Sierra Vista	46	81,732	4	249,000	—	—	73	113,425	123	444,157
Tombstone	7	29,575	—	—	—	—	1	7,110	8	36,685
Unincorporated	34	975,856	—	—	—	—	11	92,379	45	1,068,235
Willcox	6	78,365	2	1,100	—	—	6	7,738	14	87,203
COCONINO COUNTY	223	5,268,505	7	297,909	1	87,500	37	204,611	268	5,858,525
Flagstaff	51	2,570,496	3	194,200	—	—	21	131,362	75	2,896,058
Fredonia	2	N/C	1	1,400	—	—	1	150	4	1,550
Page	19	213,444	—	—	1	87,500	7	8,000	27	308,944
Unincorporated	146	2,372,127	3	102,309	—	—	5	41,747	154	2,516,183
Williams	5	112,438	—	—	—	—	3	23,352	8	135,790
GILA COUNTY	101	1,223,862	2	129,000	—	—	32	62,670	135	1,415,532
Globe	4	47,800	—	—	—	—	4	11,900	8	59,700
Hayden	4	2,125	—	—	—	—	—	—	4	2,125
Miami	7	17,700	—	—	—	—	—	—	7	17,700
Payson	32	282,847	1	34,000	—	—	21	28,017	54	344,864
Unincorporated	54	873,390	1	95,000	—	—	7	22,753	62	991,143
GRAHAM COUNTY	42	581,029	5	193,300	—	—	5	17,350	52	791,679
Pima	3	60,000	1	23,000	—	—	—	—	4	83,000
Safford	14	96,000	3	169,300	—	—	3	16,250	20	281,550
Thatcher	7	70,710	—	—	—	—	2	1,100	9	71,810
Unincorporated	18	354,319	1	1,000	—	—	—	—	19	355,319
GREENLEE COUNTY	1	—	—	—	—	—	—	—	1	—
Clifton	1	N/C	—	—	—	—	—	—	1	N/C
Duncan	—	—	—	—	—	—	—	—	—	—
Unincorporated	—	—	—	—	—	—	—	—	—	—
MARICOPA COUNTY	2,971	95,051,815	297	85,404,981	42	9,424,916	1,816	14,517,184	5,126	204,398,896
Avondale	—	—	—	—	—	—	7	125,086	7	125,086
Buckeye	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Chandler	49	543,364	4	1,652,150	—	—	106	474,532	159	2,670,046
El Mirage	6	37,600	—	—	—	—	—	—	6	37,600
Gila Bend	—	—	1	35,000	1	400,000	—	—	2	435,000
Gilbert	26	1,075,205	—	—	—	—	3	42,482	29	1,117,687
Glendale	104	2,639,393	7	425,000	—	—	246	937,651	357	4,002,044
Goodyear	—	—	1	80,000	—	—	9	19,490	10	99,490
Guadalupe	1	N/C	—	—	—	—	—	—	1	N/C
Mesa	165	5,363,327	47	8,026,627	1	259,064	312	1,605,304	525	15,254,322
Paradise Valley	28	2,130,000	—	—	—	—	37	309,014	65	2,439,014
Peoria	28	539,614	1	123,420	—	—	43	82,647	72	745,681
Phoenix	1,609	55,564,556	197	70,664,409	13	3,943,652	603	5,657,299	2,422	135,829,916
Scottsdale	101	4,867,481	2	929,875	—	—	200	1,684,903	303	7,482,259
Surprise	5	21,600	1	1,500	—	—	4	3,936	10	27,036
Tempe	91	2,669,300	27	2,935,800	27	4,822,200	72	711,600	217	11,138,900
Tolleson	4	20,055	—	—	—	—	2	119,000	6	139,055
Unincorporated	736	19,535,850	9	531,200	—	—	171	2,544,240	916	22,611,290
Wickenburg	1	32,800	—	—	—	—	—	—	1	32,800
Youngtown	17	11,670	—	—	—	—	1	200,000	18	211,670

Arizona Building Permits: Monthly Report (Continued)

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MAY, 1981										
MOHAVE COUNTY	292	3,763,114	16	1,006,266	—	—	270	436,055	578	5,205,435
Kingman City	25	337,552	4	131,466	—	—	6	29,223	35	498,241
Kingman Area	63	660,627	2	147,360	—	—	47	35,008	112	842,995
Lake Havasu City	40	992,742	3	121,686	—	—	26	125,237	69	1,239,665
Lake Havasu Area	5	41,871	1	29,280	—	—	3	4,424	9	75,575
Mohave Valley N.	75	846,165	2	442,528	—	—	97	133,630	174	1,422,373
Mohave Valley S.	48	463,513	2	84,504	—	—	56	85,762	106	633,779
Dolan Springs	11	62,316	1	27,648	—	—	14	4,708	26	94,672
Sacramento Valley	20	225,184	—	—	—	—	19	13,293	39	238,477
Mohave General	5	133,144	1	21,744	—	—	2	4,770	8	159,658
NAVAJO COUNTY	170	3,381,344	3	95,000	—	—	20	74,233	193	3,550,577
Holbrook	1	31,900	1	5,000	—	—	—	—	2	36,900
Show Low	12	255,898	1	57,600	—	—	13	36,008	26	349,506
Snowflake	4	N/C	—	—	—	—	—	—	4	N/C
Taylor	1	62,000	—	—	—	—	2	1,500	3	63,500
Unincorporated	140	2,913,596	1	32,400	—	—	2	15,475	143	2,961,471
Winslow	12	117,950	—	—	—	—	3	21,250	15	139,200
PIMA COUNTY	506	9,235,367	30	10,433,847	—	—	494	3,273,260	1,030	22,942,474
Marana	4	N/C	—	—	—	—	—	—	4	N/C
Oro Valley	1	40,500	—	—	—	—	—	—	1	40,500
South Tucson	15	149,430	—	—	—	—	—	—	16	150,230
Tucson	267	3,648,737	24	9,687,347	—	—	253	2,111,560	544	15,447,644
Unincorporated	219	5,396,700	6	746,500	—	—	240	1,160,900	465	7,304,100
PINAL COUNTY	150	2,436,726	21	302,953	—	—	55	260,329	226	3,000,008
Apache Junction	35	831,609	—	—	—	—	40	174,022	75	1,005,631
Casa Grande	26	607,769	11	107,253	—	—	1	65,000	38	780,022
Coolidge	13	N/C	—	—	—	—	3	5,900	16	5,900
Eloy	6	12,583	—	—	—	—	—	—	6	12,583
Florence	1	450	—	—	—	—	1	1,175	2	1,625
Kearny	2	41,000	—	—	—	—	—	—	2	41,000
Mammoth	3	115,300	—	—	—	—	—	—	3	115,300
Superior	1	1,500	—	—	—	—	3	4,300	4	5,800
Unincorporated	63	826,515	10	195,700	—	—	7	9,932	80	1,032,147
SANTA CRUZ COUNTY	29	612,075	—	—	—	—	2	384,000	31	996,075
Nogales	17	168,075	—	—	—	—	2	384,000	19	552,075
Patagonia	2	1,500	—	—	—	—	—	—	2	1,500
Unincorporated	10	442,500	—	—	—	—	—	—	10	442,500
YAVAPAI COUNTY	223	4,941,690	27	1,906,306	1	350,000	66	183,097	317	7,381,093
Chino Valley	16	82,450	3	96,000	—	—	4	1,673	23	180,123
Clarkdale	3	148,460	1	34,200	—	—	1	350	5	183,010
Cottonwood	18	95,012	5	101,000	—	—	3	30,700	26	226,712
Jerome	1	500	—	—	—	—	2	1,500	3	2,000
Prescott	38	647,184	10	1,318,946	—	—	38	101,277	86	2,067,407
Prescott Valley	20	345,904	4	178,160	—	—	—	—	24	524,064
Unincorporated	127	3,622,180	4	178,000	1	350,000	18	47,597	150	4,197,777
YUMA COUNTY	138	2,431,614	7	545,306	4	609,552	31	334,391	180	3,920,863
Parker	2	6,000	—	—	2	45,000	1	3,200	5	54,200
Somerton	14	615,629	—	—	—	—	—	—	14	615,629
Unincorporated	93	1,505,800	1	29,620	1	560,310	15	204,265	110	2,299,995
Wellton	—	—	—	—	—	—	—	—	—	—
Yuma	29	304,185	6	515,686	1	4,242	15	126,926	51	951,039
Total, Maricopa Co. May, 1981	2,971	95,051,815	297	85,404,981	42	9,424,916	1,816	14,517,184	5,126	204,398,896
Total, Maricopa Co. May, 1980	1,245	22,041,475	137	36,328,399	40	18,964,042	1,369	15,655,837	2,791	92,989,753
Percent Change	138	331	116	135	4	-50	32	-7	83	119
Total, Arizona May, 1981	4,992	130,881,776	424	101,265,168	49	10,481,968	2,946	20,025,821	8,411	262,654,733
Total, Arizona May, 1980	3,256	53,231,840	228	47,242,621	48	19,196,508	2,247	21,679,881	5,799	141,350,850
Percent Change	53	145	85	114	2	-45	31	-7	45	85

*Includes mobile homes N/C Not collected N/R: No report

Retail Food Prices

MAY, 1981

Retail Food prices in Maricopa County rose 1.5 percent in May, following a 0.9 percent decline in April. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The May index of 263.2 indicates that shoppers would now have to pay \$26.32 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$23.78 one year ago. The May, 1981, index reflects a 10.7 percent increase over the May, 1980, value.

This month's higher index value was the result of increases in all of the subgroups. *Fruits and Vegetables* jumped 4.1 percent, followed by *Other Foods* (2.0 percent), *Cereals and Bakery Products* (0.8 percent), *Dairy Products* (0.7 percent), and *Meats, Poultry, Fish, and Eggs* (0.5 percent).

Even though tomato prices plunged 41.3 percent and oranges fell 8.9 percent, large increases in several categories of *Fruits and Vegetables* resulted in an overall price increase for the subgroup. The miscellaneous fresh vegetables category soared 20.7 percent, primarily due to higher prices for celery and carrots. Lettuce rose 17.7 percent, followed by miscellaneous fresh fruits (17.3 percent).

Moderate increases were noted in most of the categories in *Other Foods*. Cola drinks excluding diet cola rose 8.8 percent, while the miscellaneous condiments category advanced 4.2 percent. Sweets, excluding candy, sugar, and sweeteners, increased 3.6 percent, while a slight decline was noted for frozen prepared food (-1.8 percent).

Most items in *Cereals and Bakery Products* posted increases this month, notably flour and prepared flour mixes (4.8 percent), cookies (3.2 percent), and cereal (1.6 percent). A moderate drop for white bread (-1.1 percent) only partially offset the subgroup's gains. All items in the *Dairy Products* subgroup rose or were unchanged during May. Ice cream and related products climbed 1.1 percent and fresh whole milk increased 0.6 percent.

Although the subgroup *Meats, Poultry, Fish, and Eggs* rose only slightly, it was the result of sharp increases and decreases in several categories. Most meat prices were up, notably ground beef other than canned (16.4 percent), steak other than round or sirloin (8.3 percent), and noncanned ham (7.6 percent). Partially counteracting these increases were falling prices for chicken (-23.4 percent) and eggs (-11.6 percent).

A comparison of February, 1981, Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a food group in February, 1981, (obtainable for an outlay of \$10.00 at 1967 average prices) were \$26.05 in Maricopa County; \$26.57 in Los Angeles-Long Beach, \$26.72 in San Francisco-Oakland; \$26.97 in Chicago-Northwestern Indiana; and averaged \$26.73 in the United States.

TABLE 1
INDEX FOR FOOD CONSUMED AT HOME
Maricopa County, United States, and Selected Metropolitan Areas
(Average 1967 = 100 percent)

Group	Maricopa County May '81 ^a	Maricopa County Feb '81 ^b	United States Feb '81	Los Angeles Long Beach Feb '81	San Francisco Oakland Feb '81	Chicago ^c North western Indiana Feb '81
Food Consumed at Home	263.2	260.5	267.3	265.7	267.2	269.7
Cereals and Bakery Products	252.0	248.6	265.3	270.5	273.8	269.2
Meats, Poultry, Fish, and Eggs	256.6	261.0	252.5	253.7	258.1	260.4
Dairy Products	232.9	228.9	242.1	233.7	234.6	234.6
Fruits and Vegetables	262.1	249.0	267.3	258.5	252.4	272.7
Other Foods Consumed at Home	294.7	291.5	323.0	319.4	330.6	328.1

^aComputed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

^bMaricopa County food prices are reported for the month closest to publication.

^cComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index Comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Retail Food Prices

JUNE, 1981

Retail food prices in Maricopa County rose 0.9 percent in June, following a 1.5 percent increase in May. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The June index of 265.6 indicates that shoppers would now have to pay \$26.56 for a similar basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$23.79 one year ago. The June, 1981, index reflects an 11.6 percent increase over the June, 1980, value.

Fruits and Vegetables posted the largest gain this month (4.5 percent), followed by *Cereals and Bakery Products* (1.4 percent) and *Meats, Poultry, Fish, and Eggs* (0.4 percent). The *Other Foods* subgroup showed a slight increase (0.1 percent), while *Dairy Products* fell -0.3 percent.

Several sharp increases in *Fruits and Vegetables* contributed to that subgroup's large gain. The price of oranges jumped 26.9 percent, followed by potatoes (15.6 percent), lettuce (13.9 percent), and apples (13.5 percent). These increases were moderated by lower prices for bananas (-6.8 percent) and frozen fruit and fruit juices (-5.2 percent).

Higher prices were noted in several categories of *Cereals and Bakery Products* this month. Fresh sweet rolls, coffee cake, and doughnuts rose 4.3 percent,

followed by white bread (2.9 percent) and cereal (2.8 percent).

With the exception of poultry items, most categories in the *Meats, Poultry, Fish, and Eggs* showed only minor price fluctuations. Chicken prices jumped 12.8 percent and poultry other than chicken rose 3.9 percent, while pork chops and noncanned ham edged up only 2.2 percent and 1.2 percent, respectively. Declines in the subgroup were noted for eggs (-5.5 percent), canned ham (-3.5 percent), and bacon (-0.9 percent).

There were lower prices for sugar/artificial sweeteners (-6.9 percent) and for nuts, potato chips, and other snacks (-2.9 percent) in the *Other Foods* subgroup during June. These declines, however, were offset by higher prices for carbonated drinks excluding nondietary cola (4.3 percent), margarine (2.1 percent), and canned or packaged soup (1.7 percent).

Prices for *Dairy Products* were relatively stable. The miscellaneous dairy products category slid -3.1 percent, primarily due to sale prices for yogurt. Fresh whole milk was down -0.5 percent, while a 0.2 percent rise was noted for cheese as well as fresh milk (other than whole milk) and cream.

A comparison of March, 1981, Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a foodstuffs group in March, 1981, (obtainable for an outlay of \$10.00 at 1967 average prices) were \$26.17 in Maricopa County; \$26.79 in Los Angeles-Long Beach; \$26.95 in San Francisco-Oakland; \$26.97 in Chicago-Northwestern Indiana; and averaged \$26.86 in the United States.

TABLE 1
INDEX FOR FOOD CONSUMED AT HOME
Maricopa County, United States, and Selected Metropolitan Areas
(Average 1967 = 100 percent)

Group	Maricopa County June '81 ^a	Maricopa County Mar '81 ^b	United States Mar '81	Los Angeles ^c Long Beach Mar '81	San Francisco Oakland Mar '81	Chicago North western Indiana Mar '81
Food Consumed at Home	265.6	261.7	268.6	267.9	269.5	269.7
Cereals and Bakery Products	255.5	248.4	266.7	276.6	277.8	272.4
Meats, Poultry, Fish, and Eggs	257.6	262.9	250.5	250.6	253.8	257.8
Dairy Products	232.3	229.2	242.6	233.8	235.1	234.3
Fruits and Vegetables	273.8	249.5	278.2	269.6	265.7	275.7
Other Foods Consumed at Home	295.0	293.5	324.1	322.8	335.8	328.8

^aComputed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

^bMaricopa County food prices are reported for the month closest to publication.

^cComparisons of food prices among various cities and the United States average are made on the basis of earlier months because of the lag in collecting price reports from these other areas.

Note: Index Comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Metropolitan Phoenix

Consumer Price Index

SECOND QUARTER, 1981

Consumer prices in Metropolitan Phoenix rose 1.9 percent during the second quarter of 1981. This quarterly increase is the smallest recorded in the Phoenix area since the second quarter of 1980. Favorable trends are working to reduce Arizona's rate of inflation. Together, prices for energy (transportation, and household fuels and utilities) and food account for 40.1 percent of the Consumer Price Index. Moderate increases in these three categories of transportation, household fuels and utilities, and food (1.3, 1.5, and 1.5 percent respectively) are helping to lessen overall inflation. Lower inflation rates, as currently observed in Phoenix and across the United States, have occurred after each of the recent recessions. This trend toward lower inflation should continue into early 1982.

This latest quarterly increase of 1.9 percent compares favorably to the increases posted for the United States as a whole (2.2 percent) and for the comparison cities of Chicago (1.9 percent) and Los Angeles (2.2 percent). The annual percentage change of 11.3 percent for Phoenix was higher than the annual rates for the United States (9.8 percent), Chicago (8.8 percent) and Los Angeles (7.3 percent).

The Consumer Price Index (CPI) for the Phoenix Metropolitan Area, upon which these inflation measures are based, is prepared by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. The quarterly CPI is based upon comprehensive surveys undertaken by the Bureau of Business and Economic

Research in cooperative cosponsorship with Valley National Bank.

In the *Food* category, Food at Home rose at the modest rate of 0.9 percent. Lower prices for Meats, Poultry, Fish, and Eggs over the three-month period contributed to the moderation in overall food prices. Prices of Fruits and Vegetables increased 6.2 percent, with smaller increases reported for Cereals and Bakery Products (2.3 percent), Dairy Products (1.7 percent) and Other Foods at Home (0.4 percent). The Phoenix area rise of 0.9 percent is lower than the Los Angeles area increase of 1.4 percent, but higher than the United States figure of 0.2 percent, and the Chicago decrease of -1.5 percent. Food Away From Home rose 2.7 percent, a rate higher than those of the United States, Chicago, and Los Angeles.

The price index for *Housing* increased by 2.7 percent in the second quarter of 1981. This was the smallest increase in *Housing* in the past nine months. A large increase in contracted mortgage interest costs of 10.0 percent was partially offset by a decrease in home purchase prices of -0.6 percent. Residential rents continued to increase slightly, at 1.3 percent in the second quarter. Fuel and other utility costs rose 1.5 percent; current costs show a change of only 2.5 percent from one year ago. In the last quarter, however, electricity costs were up 12.6 percent, while utility gas was down 19.9 percent.

Apparel and Upkeep rose at a quarterly rate of 1.0 percent. This quarterly change in the Phoenix area is

lower than the increase posted by the nation as a whole (2.4 percent), by Chicago (2.3 percent), or by Los Angeles (4.7 percent). Women's and Girls' Apparel declined 2.9 percent, due primarily to exceptional sales in sportswear, suits, and jackets. Footwear prices continued to decline; the second quarter percentage change was -1.7 percent. The category of Men's and Boys' apparel showed its largest increase in more than a year, with a 4.1 percent gain.

Transportation posted a moderate 1.3 percent rise in the second quarter, after a large 5.4 percent change in the first quarter. In Private Transportation, prices for used cars and parts and equipment increased, but lower automobile insurance and repair costs resulted in a rise of only 1.2 percent. Gasoline and new car prices each increased by only 0.9 percent. Public Transportation costs continued to increase rapidly however, rising 3.5 percent in the latest quarter. Intercity bus fares, train fares, and airline fares were responsible for this quarter's increase. The annual rate of change for Public Transportation (29.0 percent) marks the largest annual increase of any of the CPI categories or subcategories. Phoenix area transportation costs compared favorably with the quarterly figures for the nation (2.6 percent)

and with the other comparison cities of Chicago (2.0 percent) and Los Angeles (3.0 percent).

Medical Care in the Phoenix Metropolitan Area rose at a rate of 0.7 percent, with stable prices for physicians' services, hospital rooms, commercial health insurance, and other medical services. This marks the smallest quarterly increase for medical care in the past two years. Phoenix area medical care rates were substantially lower than the increases posted by the entire United States, Chicago, and Los Angeles, at 2.3 percent, 2.9 percent, and 1.5 percent respectively.

Entertainment costs rose by only 0.4 percent. Increases in previous quarters pushed the annual change up to 12.5 percent, however. Comparable entertainment annual increases are 8.0 percent for the United States, 9.2 percent for Chicago, and 10.2 percent for the Los Angeles area.

The cost of *Other Goods and Services* rose 2.7 percent during the second quarter of 1981. This gain is partially offset by last quarter's declining rate of -1.4 percent. The valley's annual rate in the category of *Other Goods and Services* was 7.4 percent — lower than the figures for the United States (9.9 percent), Chicago (12.5 percent), and Los Angeles (9.0 percent).

Note: The complete Consumer Price Index for Phoenix, the United States, and comparative cities is found on the next page.

METROPOLITAN PHOENIX CONSUMER PRICE INDEX
SECOND QUARTER, 1981
(1969 = 100)

<i>Group</i>	<i>First Quarter 1981 Index</i>	<i>Second Quarter 1981 Index</i>	<i>Percentage Change from Last Quarter</i>	<i>Percentage Change from One Year Ago</i>
ALL ITEMS	241.2	245.8	1.9	11.3
Food and Beverages	225.9	229.2	1.5	10.7
Food	231.3	234.7	1.5	11.0
Food at Home	242.8	245.0	0.9	10.8
Cereal and Bakery Products	237.3	242.8	2.3	10.7
Meats, Poultry, Fish, and Eggs	234.0	229.1	-2.1	6.3
Dairy Products	217.2	220.9	1.7	11.0
Fruits and Vegetables	243.3	258.4	6.2	21.2
Other Food at Home	270.1	271.3	0.4	10.0
Food Away from Home	208.3	213.8	2.7	11.2
Alcoholic Beverages	156.5	158.5	1.3	7.4
Housing	244.2	250.7	2.7	12.6
Shelter	258.0	266.0	3.1	15.4
Rent, Residential	179.3	181.7	1.3	3.4
Homeownership	273.7	283.2	3.5	18.4
Fuel and Other Utilities	247.9	251.8	1.5	2.5
Household Furnishings and Operations	197.8	201.1	1.7	7.5
Apparel and Upkeep	177.9	179.7	1.0	5.6
Apparel Commodities	168.1	168.1	0.0	2.6
Men's and Boys' Apparel	153.1	159.4	4.1	7.2
Women's and Girls' Apparel	164.9	160.3	-2.8	2.1
Footwear	204.9	201.5	-1.7	-6.6
Transportation	261.7	265.2	1.3	11.4
Private Transportation	258.9	261.9	1.2	10.4
Public Transportation	310.4	321.2	3.5	29.0
Medical Care	322.2	324.6	0.7	8.5
Entertainment	205.5	206.3	0.4	12.5
Other Goods and Services	223.1	229.2	2.7	7.4
Personal Care	220.3	225.2	2.3	7.1

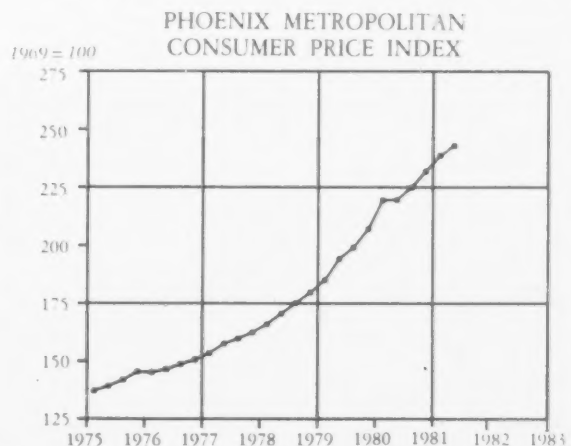
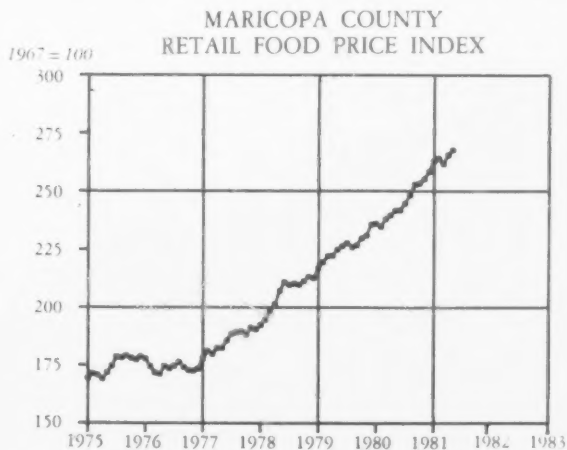
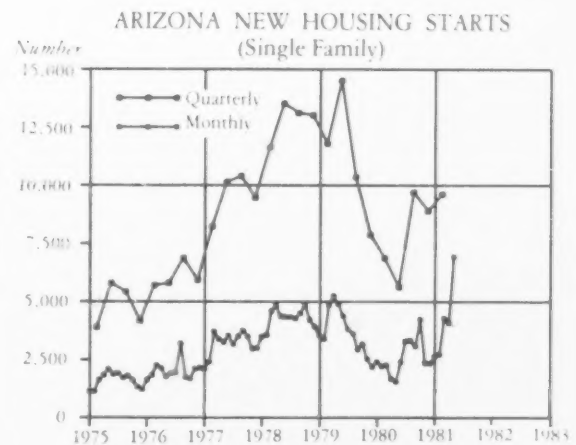
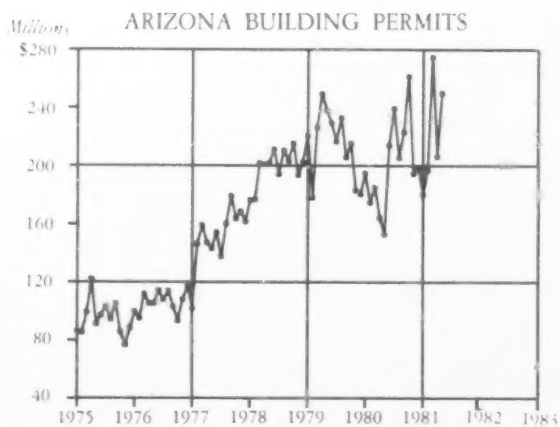
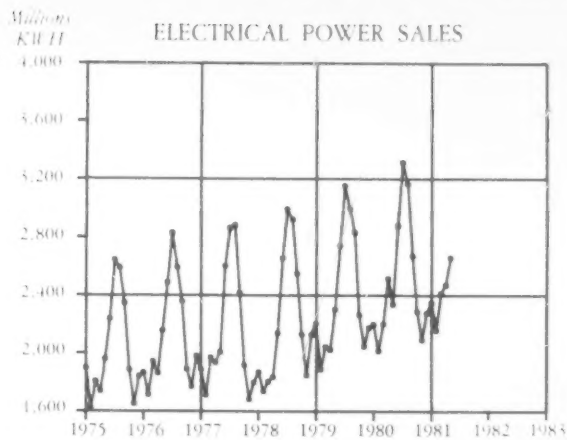
Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

UNITED STATES AND COMPARATIVE CITIES
(1969 = 100)

<i>Group</i>	<i>United States</i>		<i>Chicago</i>		<i>Los Angeles</i>	
	<i>Percentage Change From Last Quarter</i>	<i>Percentage Change From One Year Ago</i>	<i>Percentage Change From Last Quarter</i>	<i>Percentage Change From One Year Ago</i>	<i>Percentage Change From Last Quarter</i>	<i>Percentage Change From One Year Ago</i>
ALL ITEMS	2.2	9.8	1.9	8.8	2.2	7.3
Food	0.6	8.8	-1.0	5.8	1.0	9.2
Food at Home	0.2	8.6	-1.5	6.5	1.4	9.7
Food Away From Home	1.6	9.3	0.1	4.5	0.4	8.4
Housing	2.7	10.2	2.8	9.8	2.1	5.6
Shelter	2.7	10.1	2.9	9.6	1.9	4.6
Fuel & Utilities	3.4	14.1	2.1	14.3	5.7	11.8
Household Furnishings & Operations	2.4	7.8	2.5	7.1	1.1	7.8
Apparel and Upkeep	2.4	5.0	2.3	1.0	4.7	5.3
Transportation	2.6	11.6	2.0	10.4	3.0	9.9
Medical Care	2.3	9.7	2.9	8.8	1.5	7.8
Entertainment	1.7	8.0	1.5	9.2	1.8	10.2
Other Goods and Services	2.1	9.9	3.6	12.5	3.6	9.0

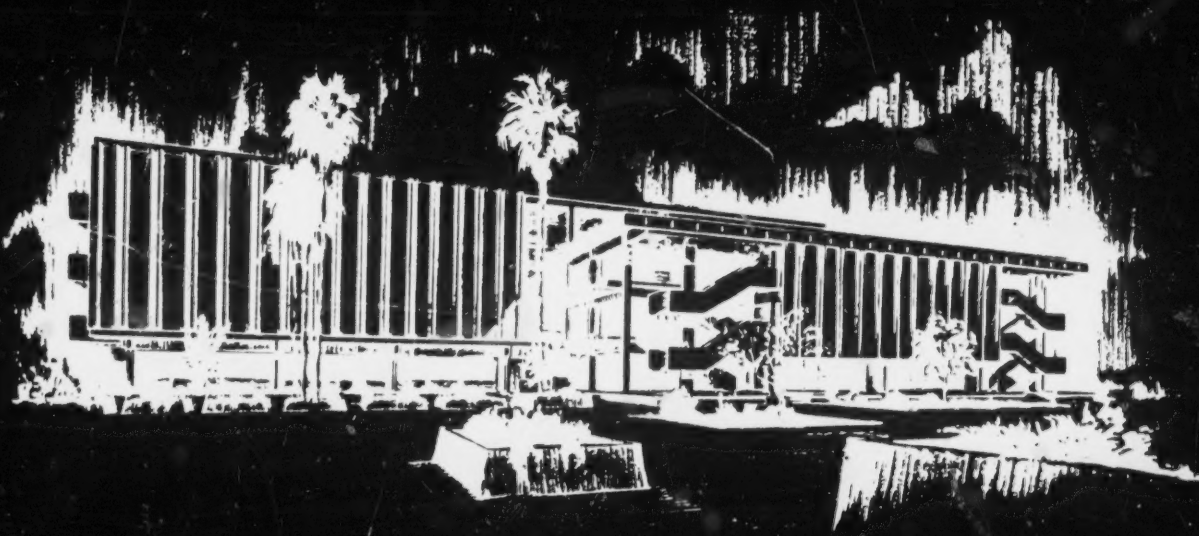
Source: Metropolitan Phoenix data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank; other data from U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

Arizona Economic Indicators



Source: All data compiled by the Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

ARIZONA BUSINESS



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Report To The Reader

Editor's Note: William E. Reif, Professor of Management, was recently appointed to the position of Interim Dean of the College of Business Administration at Arizona State University.

Dr. Reif has been a faculty member in the ASU Department of Management since 1970 and has three books and over fifty articles to his credit. In addition, he has served as management consultant to a number of businesses and governmental organizations.

In the following remarks, Dr. Reif discusses some of the College's priorities for the 1981-1982 academic year.

Recently we announced a five-year goal for the ASU College of Business Administration to become one of the top colleges of business in the country. To achieve that goal, we will not only build upon our reputation as an excellent teaching institution, but we will also aim for national recognition of our research and other scholarly activities.

We also plan to expand the College's role as an active contributor to the community and to the state. Professional education must be a two-way street, however. We intend to assist the business community in getting even more involved in the College, and we plan to increase the opportunities for meaningful interaction among business people, faculty, and students.

We feel strongly about our responsibility as a valuable community resource, and we intend to improve the quality of educational and business services offered by the various units that serve the public: the Center for Executive Development, Productivity Institute, Real Estate Institute, Small Business Institute, and the Bureau of Business and Economic Research, which publishes *Arizona Business*.

The editorial policy of *Arizona Business* is geared to your needs and interests, and the articles will continue to keep you abreast of significant business concepts and strategies as well as useful management techniques. *Arizona Business* will also continue to provide you with statistical data that can improve the quality of your business decisions.

If you have suggestions for ways that we can increase the benefits you receive from *Arizona Business* or from any of the other programs in the College, please give us a call. We appreciate the opportunity to discuss them.

William E. Reif
Interim Dean

Mexican Petroleum and U.S.-Mexican Trade

JERRY R. LADMAN

In 1980, United States-Mexican trade (defined as the sum of exports and imports) again increased 48 percent, as it had done in 1979. With these sharp rises, Mexico now accounts for about 6 percent of total United States trade and is the United States' third most important trading partner after Canada and Japan. From the Mexican side, the United States continues to be that country's overwhelmingly most important trading partner, accounting for almost two-thirds of the value of foreign trade, a fact that is disturbing to Mexico because of the implications of excessive dependence on the United States.

The sharp increases in United States-Mexican trade are directly attributable to Mexico's recently discovered petroleum wealth. Since 1975, Mexican petroleum exports, and, since 1979, natural gas exports, have led the rapidly growing United States imports from its southern neighbor. Simultaneously, beginning in 1977, the petroleum-fueled growth of the Mexican economy

has created a strong increase in demand for U.S. exports, especially in the supply of petroleum equipment and capital goods for the transportation and construction industries. The purpose of this article is to provide an overview of the ways Mexico's petroleum has affected United States-Mexican trade in the past several years and to make projections for the future. In order to address these questions it is first necessary to examine Mexico's petroleum wealth, the Mexican economy, and Mexico's plans for development. All of these factors explain recent trends and projections for trade between the countries.

MEXICO'S PETROLEUM WEALTH

Mexico's petroleum industry, developed by international oil companies, was a leading sector in the Mexican economy in the early twentieth century. By 1921 Mexico was the world's largest exporter of hydrocarbons. However, the situation changed after the international oil companies shifted their investments to the Middle East and Venezuela and the Mexican government nationalized the industry in 1938. The petroleum industry did not develop the capacity to meet the rapidly growing domestic demand, and by the late 1960s, Mexico was a net importer of oil.

This was to change again, however, as Mexican petroleum engineers discovered huge reserves of hydrocarbons in southeastern Mexico in the mid-1960s. In 1972, when oil began to flow from these new fields, the

Over the next several decades, hydrocarbons will continue to be a leading sector in the Mexican economy and will be the principal factor in determining trade between the United States and Mexico as it indirectly provides the basis for growth in other sectors of the economy.

Jerry R. Ladman is Professor of Economics in the College of Business Administration, Arizona State University. He is also the director of the ASU Center for Latin American Studies.

Mexican government reported that Mexico had proven reserves of 5.4 billion barrels of oil and natural gas equivalents and that production was 71,000 barrels per day. At the beginning of 1977, the figure for proven reserves had risen to 11.6 billion barrels. New discoveries continued, and in September of 1980, proven reserves were estimated at 250 billion barrels; production was 2.3 million barrels per day.¹ In that year Mexico ranked as the world's fifth largest producer of oil and the sixth largest repository of proven oil reserves. Output is expected to rise to at least 2.7 million barrels per day in 1981, and government plans are to produce 3.5 million barrels per day by 1985, 4.1 million per day by 1990.

Mexico's new petroleum wealth was to be a major turning point in the country's economic development. Although the new fields began producing in 1972, it was not until late 1976, when the current president José López Portillo assumed office, that the levels of production and discoveries of additional reserves were sufficient to enable Mexico to fully realize the potential for long-term development that petroleum offered. The timing could not have been more propitious. In 1976 Mexico was in the midst of its worst political and economic crisis in three decades, a crisis that had grown out of the government's inability to correct the severe structural and distributional imbalances in the economy. The benefits of hydrocarbons provided the basis not only for easing the immediate crisis but also for raising hopes that petroleum-related growth could provide the means for longer-term structural reforms. The López Portillo administration was successful in both dimensions. Within one year, confidence in the Mexican economy was largely restored, and between May, 1978, and November, 1980, a series of national and sectoral economic plans were unfolded that were to chart the course of Mexico's development with petroleum.

THE IMBALANCES IN THE MEXICAN ECONOMY

By 1970 it had become very apparent that, in spite of Mexico's strong growth since World War II, the imbalances of this growth, combined with one of the world's most rapidly growing populations, had created a number of problems. First, open unemployment and underemployment affected 25 to 40 percent of the work force. Second, more than half of the income was concentrated in the hands of 20 percent of the population whereas half the population received less than 20 percent of the income. Third, more than half of the industrial production was concentrated in Mexico City to the neglect of most other areas. Commercial agriculture was

concentrated in limited irrigated areas while the large bulk of the rural population lived in poverty. Fourth, the agricultural sector was unable to produce sufficient food to meet domestic demand, thus creating the need to import basic foodstuffs. Fifth, the highly protected Mexican manufacturing sector was inefficient and not competitive in world markets. Moreover, the sector was not heavily integrated; Mexico imported a very large proportion of its capital goods. Sixth, balance of payments problems had emerged due to chronic trade deficits, an overvalued peso, and the need to borrow heavily abroad. Finally, Mexico was very dependent upon foreign trade and foreign investment, especially with the United States.

López Portillo's predecessor, Luis Echeverría, who held office between 1970 and 1976, had unsuccessfully attacked these problems through ambitious programs that required heavy deficit financing and stronger government intervention. The deficit financing resulted in pernicious inflation that, in 1976, contributed to the first devaluation of the peso since 1954. This, combined with government intervention, antagonized the private industrial sector. The resultant political and economic instability had the country on the verge of chaos.

MEXICO'S LONG-TERM DEVELOPMENT PLANS

In May, 1978, the López Portillo administration began to announce a series of national plans that would be used to chart Mexico's growth with petroleum.² In that month the Plan for Urban Development was established. Its major thrust was to reduce the relative concentration of production and population in major urban centers by creating numerous growth poles in the nation. Fundamental to this objective is the goal of reducing the annual rate of population growth to 2.5 percent by 1982.³

The National Industrial Plan, issued in March, 1979, states that real gross domestic product should increase from 7 percent in 1979 to 10 percent by 1982 and should continue at that level until 1990. Furthermore, by 1982 new jobs should be created at the rate of 5 percent per year. The plan emphasizes regional diversification of industry and investment in the food processing and capital goods industries. Government policies of tax incentives, subsidies, protection from imports, technical assistance, and infrastructure development are to be used to encourage planned investment.⁴

In March, 1980, the government announced the Mexican Food System as its strategy to alleviate the need for food imports and to reduce poverty in rural areas.

The system provides government subsidies to small farmers to encourage them to produce basic foodstuffs. The goal is for Mexico to become self-sufficient in these products by 1985.⁵

In April, 1980, the Global Development Plan was set forth to tie together the previous plans and provide the overall framework for economic development in the last two years of the López Portillo administration. It emphasizes strong economic growth that creates jobs, improves income distribution, and reduces dependence on foreign nations, basically the United States.⁶

The National Energy Plan, issued in November 1980, details the López Portillo administration's plans for the role of petroleum in Mexico's economic development. The plan delineates the government's decision to conserve the hydrocarbon resources by calling for only moderate increases in petroleum production along with the development of alternate energy sources, including coal and electricity, in the near future and considerable nuclear power by the end of the century. Oil production is scheduled to rise to 3.5 million barrels per day in 1985 and to 4.1 million barrels per day in 1990. Most increases are scheduled for domestic consumption. Limits on oil exports are placed at 1.5 million barrels per day and natural gas at 300 million cubic feet. Moreover, in another move to reduce Mexico's dependence on the United States, the plan states that no single nation is to receive more than one-half of the oil exports.⁷

PERFORMANCE OF THE MEXICAN ECONOMY

In 1976 and 1977, during the economic crisis and the first year of the recovery, Mexican gross domestic product (GDP) grew very slowly averaging only a 2.6 percent increase in real terms for the two years. However, by 1978 sharp increases in government outlays for both current expenditures and capital investments, combined with greater private investment, fueled an economic boom. In 1978 and 1979, real GDP grew 7 and 8 percent respectively. In 1980 the boom tapered, and the rate of growth dropped to 7.4 percent. The petroleum and petrochemical sectors have been leading the growth of the Mexican economy. Construction, much of it associated with petroleum and public works, has been exceptionally strong. Electricity-generation and manufacturing grew at rates in excess of overall GDP. Especially important were increases in consumer durable goods and capital goods such as transportation equipment and machinery.

The problem sector continues to be agriculture with production declining in 1979 after rising in 1978.

Especially significant were the declines in basic foods grown in rain-fed areas that suffered severe droughts. This created the need to import even more foods, which placed severe strains on the country's port and rail transportation facilities. Although production of basic foods rose again in 1980, food imports continued to rise due to strong domestic demand.

Inflation has abounded. Following devaluation, the consumer price index rose 27.2 percent in 1976 and 20.7 percent in 1977. Rises in the index settled at 16.2 and 20.0 percent in 1978 and 1979. In 1980, however, the strains of growth in the economy became apparent when prices rose 29.8 percent. An excess demand for goods and services, caused by increasing government deficits financed by central bank credit, has been the principal factor leading to the price rises.

In spite of the rapid growth in petroleum exports, Mexico has experienced an increasing deficit in its balance of trade since 1977. The strong demand for capital goods, plus rising consumer incomes, a growing population, and the need to import basic foods are the major contributors to the rise in imports. Simultaneously, however, the booming economy has attracted considerable foreign capital. Thus, the current account deficit has been more than matched by the increases in public and private external debt. However, with rising interest rates and increased debt, the debt servicing requirements have grown so rapidly that the net inflow of capital to Mexico is small.

The 31.3 percent increase in the Mexican federal budget programmed for 1981 should ensure continued economic expansion this year in the magnitude of 7.5 percent real growth of GDP. The government predicts that the price index will rise some 30 percent, but is willing to accept this in order to foster economic expansion and job creation. The 1981 budget emphasizes investments in agriculture and transportation in order to begin to break the bottlenecks in these sectors.

LONG-TERM OUTLOOK

Petroleum will be the fulcrum of the Mexican economy for at least the next two decades. It will contribute directly to income and will provide export revenues to finance imports. The indirect effects of creating income and jobs in the nonpetroleum sectors will be even more important and will serve as stimuli for both domestic and foreign investment.

As provided in the national plans, the government has assumed the responsibility for orchestrating the expanding economic activity in order to try to alleviate

the inherent structural and distributional imbalances in the Mexican economy. The plans are ambitious and it is doubtful whether the economy is capable of reaching all the targets and the timetables established in the plans. Nevertheless the outlook for strong economic growth that moves in the direction of the goals set forth in the plans is promising. To be sure, there will be serious problems such as creating enough jobs to absorb the new entrants into the work force, suppressing inflationary pressures in a rapidly expanding economy, coping with a growing external debt, and providing the regional transformation of the economy. Especially difficult will be the transformation of agriculture in the rainfed rural areas.

As it has already done since 1976, the continued growth of the Mexican economy will give rise to important changes in the composition and volume of Mexican foreign trade. The implications of these changes of United States-Mexican and Arizona-Mexican trade are significant. The following sections examine the changes in United States-Mexican trade since 1976, and trade prospects for the United States and Arizona with Mexico over the next two decades.

UNITED STATES-MEXICAN TRADE

The rapid growth in United States-Mexican trade between 1976 and 1980 is shown in Table 1. Over this five-year period both U.S. exports and imports more than tripled, measured in current dollars. U.S. imports increased more steadily than exports, however, because of the large annual increases in U.S. imports of petroleum and natural gas. In contrast, the levels of U.S. exports to Mexico followed the growth of the Mexican economy with sharp annual increases beginning with the rapid acceleration of the economy in 1978. Consequently, in the last three years U.S. exports have grown more rapidly than imports, a factor that has led to a significantly more favorable balance of trade for the United States.

Data for the first nine months of 1980 show that petroleum and natural gas accounted for more than half of U.S. imports from Mexico in that period.⁸ Manufactured goods were the next most important category. Important lines were telecommunications and sound reproduction equipment, electrical machinery, silver, and wearing apparel. Products assembled under the Mexican Border Industrialization Program were important contributors to this category. The other major category of imports was food products including fresh fruits and vegetables, coffee, and seafood.

Apart from petroleum and natural gas, all of these products have been the mainstays of U.S. imports from

TABLE 1

U.S. TRADE WITH MEXICO, 1976-1980 (Millions of Dollars)

	U.S. Exports	U.S. Imports	U.S. Balance of Trade
1976	\$ 4,990	\$ 3,598	\$1,392
1977	4,822	4,694	128
1978	6,680	6,074	606
1979	9,847	8,813	1,034
1980	15,145 ^d	12,520 ^d	2,625

^dPreliminary figures.

Source: U.S. Department of Commerce.

Mexico over the 1970s.⁹ It is noteworthy, however, that the relative importance of manufactured goods has increased compared to food products reflecting Mexico's increased capabilities to export this class of goods.

Over the same nine-month period in 1980, manufactured goods accounted for about three-fourths of U.S. exports to Mexico. The most important goods were transportation equipment, including parts used in assembly operations and repairs, airplanes, motors and tractors. Construction and mining equipment, electronic components, chemicals and iron and steel products were other manufactured goods with large sales. Food, especially corn, wheat, and soybeans, was of particular importance, accounting for another 12 percent of the total. These imports were necessary because of the chronic inability of the Mexican agricultural sector to raise production at a rate commensurate with the growing internal demand, a condition which was exacerbated by the poor growing season in 1979. The pattern of U.S. exports in 1980 was similar to that existing over the decade of the 1970s, although the relative importance of agricultural products has increased slightly.

BILATERAL TRADE ISSUES

Up to now, apart from the Tomato War, there has been little open conflict between the United States and Mexico on bilateral trade issues.¹⁰ With the expansion of the Mexican manufacturing sector it is very likely that increasingly larger numbers of Mexican products will compete with U.S. goods both in the United States and abroad. As trade volume increases and the composition of trade changes, more conflicts can be expected. Indeed in the future it is very likely that trade issues will be at

the center of United States-Mexican relations and will overshadow the issues of energy and undocumented workers.

The need to develop a mechanism to guide trade between the two countries is apparent. Over the past several years the United States encouraged Mexico to affiliate with the General Agreement on Tariffs and Trade (GATT), a measure that would have forced Mexico to take steps toward removing extensive trade barriers and subsidies for exporters. U.S. officials worked closely with counterparts from Mexico to work out the arrangements, and it appeared that Mexico would affiliate with GATT. However, in March, 1980, López Portillo announced that Mexico had decided not to join GATT, at least for the next few years. Clearly it was decided that it was best for Mexico to maintain its options to protect and subsidize domestic industry. This decision leaves the two countries without any formal framework to govern bilateral trade. Conflicts can be expected to arise, particularly as Mexican products increasingly compete with U.S. manufacturers. In particular, U.S. legislation provides for the assessment of countervailing duties on foreign imports if it is adjudged that foreign subsidies to exports harm domestic U.S. producers. Since Mexico's development plans call for many subsidies, conflicts with domestic U.S. producers are likely to occur.

PROSPECTS FOR TRADE

Over the next several decades, hydrocarbons will continue to be a leading sector in the Mexican economy and will be the principal factor in determining trade between the two countries as it indirectly provides the basis for growth in other sectors of the economy. The manner in which it plays this role will depend, however, on the rates and patterns of economic growth in the other sectors as well as on the success of the government in reducing external dependence on the United States.

Future U.S. imports from Mexico are not expected to increase as rapidly as they did in the past five years because of the Mexican government's decisions to limit daily hydrocarbon exports to 300 million cubic feet of natural gas, and 1.5 million barrels of petroleum. No more than 50 percent of the petroleum can be sold to any single country. Currently the United States receives all of Mexico's natural gas exports and about 75 percent of its oil exports. Since present levels of U.S. imports of gas and petroleum are only slightly below the new levels, only small increases in volume are to be expected in future years unless the Mexican government decides

to increase the export limits. Such a decision does not appear likely during the remaining two years of the López Portillo administration but could come at a later time if Mexico needs to finance imports and service foreign debt.

United States imports of electronic goods, wearing apparel and other products assembled in plants under the Border Industrialization Program should continue to grow, especially in periods of strong economic growth in the United States. However, to counteract this trend, as Mexican wages continue to rise due to inflation, an increasing number of U.S. firms may choose to locate plants in other countries that have less expensive labor. Mexico can be expected to continue as a major supplier of winter fruits and vegetables and seafood. In the longer run, relatively more U.S. imports of manufactured goods are to be expected as Mexico diversifies and deepens its industrial capacity and becomes more competitive in export markets.

In the next few years the rapidly growing Mexican economy will create a continued strong demand for U.S. exports of capital and intermediate goods, especially in the construction, petroleum, transportation, and high technology sectors. Mexico's demand for agricultural imports from the United States will largely depend on the success of the government's plans to revitalize small-farmer agriculture, a matter that at best will require a number of years. In the longer run, however, as the Mexican economy becomes more developed and more self-sufficient in producing capital and intermediate goods, the composition of exports can be expected to change with more demand for high technology goods and less demand for construction, mining and transportation equipment as well as agricultural products.

United States exports to Mexico will be affected by Mexico's commitment to diminish its dependence on the United States and diversify trade. In the last year Mexico has increasingly used petroleum sales to negotiate favorable arrangements for imports of industrial and agricultural goods, technology, and financing from other countries, especially those of Western Europe, Canada and Japan. While such efforts will undoubtedly decrease the relative importance of U.S. exports among total Mexican imports, the expected absolute gains to the United States are promising due to the well-established marketing outlets and extensive foreign investment of U.S. firms in Mexico.

The trends will favor increases in United States-Mexican trade by Arizona enterprises. The Arizona industrial sector specializes in high technology goods such as electronics and technical equipment that are

almost certain to be in greater demand as the Mexican economy expands. Arizona has never been the origin of major exports of raw materials and agricultural products to Mexico and will not be harmed by the probable shift of Mexican demand away from these products. Nogales will continue to be a port of entry for a number of products, such as winter vegetables, that are trans-shipped through Arizona, an activity that will also

benefit the state.

In conclusion, the growing strength of the Mexican economy will undoubtedly favor U.S. trade with our southern neighbor. Furthermore, Arizonans can anticipate a larger amount of trade, a fact that will tie the state closer to Mexico and will broaden the relationships that have more traditionally depended upon agriculture, commerce, financing, and tourism.

¹"Cuarto Informe Presidencial," *El Mercado de Valores* 40 (September 8, 1980): 878.

²For a good overview of the Mexican plans see Calvin P. Blair, "Economic Development Planning in Mexico: A New Penchant for Planning" Technical Papers Series - No. 26, Office for Public Sector Studies, Institute of Latin American Studies, The University of Texas at Austin, 1980.

³"Plan Nacional de Desarrollo Urbano Version Abreviada," *El Mercado de Valores* 38 (June 19, 1978): 477 ff.

⁴"Plan Nacional de Desarrollo Industrial," *El Mercado de Valores* 39 (July 23, 1979): 1-67.

⁵"En Marcha el Sistema Alimentario Mexicano," *El Mercado de Valores* 40 (June 9, 1980): 557-558, 572.

⁶"Plan Global de Desarrollo 1980-1982, Version Abreviada," *El Mercado de Valores* 40 (April 21, 1980): 379-382.

⁷"Programa de Energia," *El Mercado de Valores* 40 (November 24, 1980): 1165-1182.

⁸Preliminary data U.S. Department of Commerce, mimeo n.d.
⁹For detailed information on U.S. imports from and exports to Mexico see: U.S. Department of Commerce, Bureau of the Census, *U.S. General Imports and U.S. General Exports*, prepared annually.

¹⁰The so-called Tomato War refers to the attempts since the late 1960s by Florida tomato growers to restrict the entry of Mexican-grown tomatoes into the United States because of the success of Mexican growers in capturing large shares of the U.S. market for winter tomatoes.

PROGRAM ON MEXICO

"Mexico: Economic Overview and Forecast" will be the theme of a program on November 17 from 3:30 to 5:30 p.m. in the Tower Suite of the Valley National Bank Center, 241 N. Central Ave. Sponsors of the program are the ASU Center for Executive Development and the ASU Center for Latin American Studies.

Featured speaker is Alonso Ibanez y Duran, Director of the Center for Private Sector Economic Research, Mexico City. He will also lead a discussion on investment opportunities and the new political changes affecting monetary conditions in Mexico.

Cost is \$25 per participant. For reservations, call the ASU Center for Executive Development, 965-3441. Enrollment is limited.

Arizona Exports: Trends and Opportunities

MARTI J. RHEA
JOSEF C. BRADA

The decade of the 1970s witnessed an important increase in the internationalization of the U.S. economy. While U.S. gross national product (GNP) in current dollars increased by 9 percent per year, U.S. exports grew at an annual rate of 16 percent and imports at 18 percent. As a result, foreign trade flows have increased in relation to domestic economic activity with exports currently equal to 8 percent of GNP and imports to 9 percent. The United States has become more interdependent with the rest of the world not only in a quantitative sense but also qualitatively, including such trends as:

- The need for American firms to be more aware of foreign market developments, both in terms of export opportunities and in terms of the evolution of foreign competitors;
- Greater reliance of the United States on imported oil and many other raw materials;
- A direct relationship between the international strength of the dollar and inflation, since increases in the

international value of the dollar reduce the prices of imported consumer goods and lower the costs of firms dependent on imported inputs.

The development of Arizona's involvement in the world economy has paralleled those outlined for the national economy. The economic welfare of Arizonans is increasingly dependent on developments in international markets, and the further development of Arizona's export potential will have an important influence on statewide economic development in future years. The objective of this article is to review the structure and evolution of Arizona's export trade in recent years and to identify those trends in the international economy that will have a significant impact on the growth of Arizona's exports in the future.

THE DATA BASE

A serious obstacle to the evaluation of Arizona's export performance is the lack of adequate data. The U.S. Department of Agriculture compiles data on Arizona exports of agricultural commodities, but no comparable compilation of data on manufacturing exports exists. Consequently this analysis of Arizona exports in the nonagricultural sectors is based on survey data obtained from the Arizona Office of Economic Planning and Development (OEPAD). OEPAD's data are based on a survey of the export activities of Arizona businesses that is mailed out to 400 to 500 Arizona businesses each year. In 1977, of the 80

Manufacturing is Arizona's most important export sector, followed by tourism, mining, and agriculture. An important effect of these exports is the creation of additional employment opportunities.

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firms responding to the survey, 30 indicated that they were engaged in exporting. In 1979, 75 of 100 respondents were engaged in exporting. Since the Phoenix Chamber of Commerce has estimated that some 300 Arizona firms undertook some export activities in 1977, and 400 in 1979, the OEPAD survey results surely understate the volume of Arizona's nonagricultural exports.¹ However, the small proportion of firms responding to the OEPAD survey should not be taken to mean that a similarly low volume of exports is covered by the survey. This is because in Arizona, as in the United States as a whole, a relatively small number of firms accounts for a high proportion of total exports. OEPAD estimates that eleven Arizona firms, all included in the survey, account for about 80 percent of the state's manufacturing exports. As expected, these exporters are located in the state's major metropolitan areas. Motorola, Honeywell, Sperry Flight Systems, Goodyear Aerospace, AiResearch Manufacturing, ITT Courier, ITT Cannon and Talley Industries are located in Phoenix while International Business Machines, Burr-Brown Research, and Gates Learjet are located in Tucson.²

ARIZONA'S EXPORT PERFORMANCE, 1977-1979

The increasing importance of foreign markets for the Arizona economy is evident from Table 1. Between 1977 and 1979, Arizona exports grew more rapidly than did the total output of the exporting sectors, reflecting a greater reliance by Arizona producers on foreign markets. The largest dollar increase in exports was in manufacturing, which also accounts for the largest share of total Arizona exports. The most rapid expansion of

exports, however, occurred in the mining industry, which replaced agriculture as the third largest export sector in Arizona. In contrast to mining and manufacturing, which enjoyed export growth rates in excess of the rate of growth of total output, agriculture and tourism (expenditures by foreign visitors to Arizona) expanded their output more rapidly than their exports. Nevertheless, even for these sectors, exports in 1979 accounted for 21 and 14 percent of total sales respectively.

Manufacturing. Manufacturing is the most important export sector in Arizona, accounting for nearly one-half of the total value of Arizona exports and for 1 percent of total U.S. merchandise exports. The increasing export orientation of Arizona manufacturing, evident from Table 1, is part of a long-term internationalization of this sector. Between 1972 and 1979, Arizona's manufacturing output increased by 155 percent while manufacturing exports increased by 320 percent.

Although manufacturing exports from Arizona include a wide range of goods, the largest proportion consists of high technology equipment and components. A study of the composition of Arizona manufacturing exports by the U.S. Department of Commerce published in 1976 found that 85 percent of such exports consisted of machinery, electronic parts and equipment, and transportation equipment. Such a commodity composition of manufacturing exports is advantageous in that high technology exports tend to be less sensitive to price changes caused by exchange rate fluctuations and to the vagaries of the business cycle in foreign markets.

On the other hand, firms that compete on the basis of new technology often find that as their technology becomes disseminated abroad, foreign firms are often able to capture a large part of the market through

TABLE 1
ARIZONA OUTPUT AND EXPORTS BY SECTOR
1977 and 1979

	Total Output (000)		Percentage Increase 1977-79	Exports (000)		Percentage Increase 1977-79
	1977	1979		1977	1979	
Agriculture	\$1,165,248	\$ 1,732,200	48.7	\$ 285,000	\$ 371,700	30.4
Manufacturing ^a	3,387,600	4,800,000	41.7	725,000	1,103,000	52.1
Mining	1,621,256	2,487,955	53.5	218,000	430,777	97.6
Tourism	2,884,637	4,040,724	40.1	406,000	550,000	35.5
Total	\$9,058,741	\$13,060,879	44.2	\$1,634,000	\$2,455,477	50.3

^a Value added.

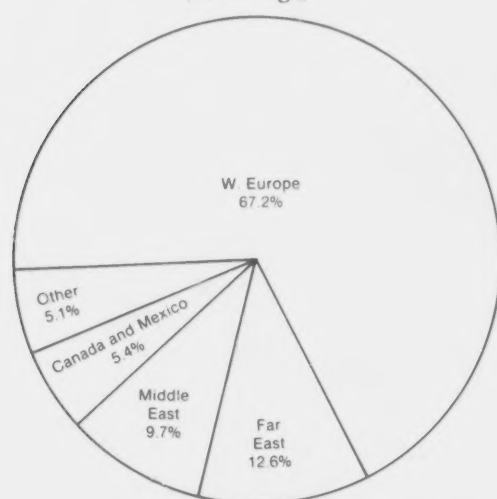
Sources: Total output from Valley National Bank of Arizona, *Arizona Statistical Review*, 36th Annual Edition, September, 1980. Exports of agriculture from U.S. Department of Agriculture, *Foreign Agricultural Trade of the United States*, February 1978 and March/April 1980. Remaining export data estimated by Arizona Office of Economic Planning and Development.

imitation. Consequently, the continued growth of high technology exports from Arizona is dependent on continuing innovation in the manufacturing sector and on the ability of the Arizona labor force to adjust its skills to what are likely to be rapidly changing skill requirements on the part of producers. Clearly both the fostering of innovation and the development of a labor force capable of absorbing new skills calls for the development of close links between private industry, state government, and the state's educational institutions.

The advanced technological level of Arizona's manufacturing exports is also reflected in their geographic distribution as shown in Figure 1. Arizona's largest customers are the industrialized countries of Western Europe, which account for two-thirds of Arizona's exports of manufactured goods. Although Western Europe also accounts for the largest share of total United States share of manufactured exports. Arizona's dependence on West European markets is twice that of the national average. Among the West European countries, France is the largest customer, followed by the Federal Republic of Germany and the United Kingdom. Indeed these three countries plus Japan account for 68 percent of all Arizona manufactured exports. These four countries are among the most technologically advanced and thus represent excellent markets for Arizona's high technology products.

FIGURE 1

SHARE OF IMPORTING REGIONS IN TOTAL
ARIZONA MANUFACTURING EXPORTS, 1979
(Percentage)



Source: Arizona Office of Economic Planning and Development.

Another area of increasing export opportunities for Arizona manufactured goods is the Middle East, because of the desire and ability of the oil exporting countries to promote imports of advanced equipment for extensive development projects. Possibly because of climatic similarities between Arizona and the Middle East and the consequent suitability of Arizona products for use in that region, the proportion of Arizona exports of manufactured goods going to Middle East countries increased from 5.5 percent in 1977 to 9.7 percent in 1979. This is a relatively favorable performance when compared with the 6.1 percent of total United States exports destined for this region.

Finally, it is noted that despite Arizona's close proximity to Mexico, the share of exports to that country and to Canada are below the national average. Arizona manufacturers, particularly those not specializing in high technology products, may be neglecting a nearby and potentially large and profitable market.

Tourism. Expenditures by foreign visitors to Arizona increased by 26 percent between 1977 and 1979, and represent the second largest source of foreign earnings for the state. As Table 2 shows, the most important segment of this market was Mexican nationals, followed by Canadians. These two groups of visitors accounted for 94 percent of the total foreign tourist expenditures in Arizona in 1977, and 88 percent in 1979. The preponderance of Mexican visitors is particularly important for the Arizona-Mexican border communities such as Nogales, Douglas, and Yuma. Expenditures by Mexican visitors often go beyond tourist type expenditures to include groceries, clothing, gasoline, and gifts.¹

Of particular interest is the growth in the category of "other" foreign visitors. The majority of such visitors are probably tourists from Japan and Western Europe and thus tend to be relatively affluent tourists able to

TABLE 2

ESTIMATES OF EXPENDITURES OF FOREIGN
VISITORS IN ARIZONA, 1977 and 1979
(Excluding Transportation)

Nationality	1977		1979	
	Expenditures (000)	Percentage of Total	Expenditures (000)	Percentage of Total
Mexican	\$315,000	78	\$408,000	74
Canadian	65,000	16	77,000	14
Others	26,000	6	65,000	12
Total	\$406,000	100	\$550,000	100

Source: Estimates compiled by the Arizona Office of Economic Planning and Development.

afford quality accommodations. Although this category is still relatively small, the share of these tourists in total foreign tourist expenditures in Arizona doubled between 1977 and 1979. Possibly a greater effort at promoting Arizona as a tourist destination among Japanese and West European travelers might yield a further expansion of this segment of the tourist market.

Mining. The mining industry experienced the most rapid rate of growth of production and of exports of the four sectors discussed in this article (see Table 3). A large part of this upsurge in exports can be attributed to improvements in the international economy that led to an increase in demand for copper, the state's largest mineral export, and to increases in the price of copper from 66.8¢/lb. in 1977, to 93¢/lb. in 1979, as well as to increases in the prices of other metals.

Copper accounted for over one-half of total Arizona mineral exports. Although only 15 percent of Arizona's copper production was exported in 1979, these exports accounted for almost two-thirds of U.S. copper exports. Gold and silver are also produced in Arizona and exported. However, the bulk of the output of these two metals is a by-product of copper smelting and consequently their production depends to a large extent on the domestic and international demand for copper rather than on gold and silver prices directly.

Historically, production and exports of the mining sector have been less stable than those of the other sectors. In part this has been due to labor strife in the industry. However, the major cause has been the international volatility of prices and the sensitivity of demand for copper on business conditions. Nevertheless, because an increase in copper prices is predicted by industry analysts for 1981 and 1982, Arizona's copper exports should enjoy rapid growth in the near future.

Agriculture. Although agriculture is the smallest of the four sectors in terms of the value of exports, the specialized nature of Arizona's agricultural production means that Arizona agriculture is both highly dependent on foreign markets and that Arizona exports of certain crops account for a significant proportion of United States exports (see Table 4). Arizona is the fourth largest state in exports of cotton and cottonseed oil. An estimated 90 percent of the state's cotton crop is exported, mainly to Japan, Taiwan, and the People's Republic of China.

One third of the Arizona citrus crop and 60 percent of the wheat crop are also exported as is a large proportion of the state's meat production. Exports of food products, in contrast to cotton exports, however, suffer from protectionist policies imposed by Japan and other potential markets in the Pacific Basin. These countries seek to protect their domestic agricultural producers by maintaining high food prices and excluding low-cost imports from the United States. Successful efforts to reduce tariff and nontariff barriers to trade in agricultural products among the Pacific Basin countries would do much to stimulate exports of agricultural products from Arizona.

EMPLOYMENT AND INCOME

The most direct effect of the export performance of Arizona businesses is through additional employment opportunities for Arizona residents. Table 5 presents estimates by OEPAD and the Phoenix District Office of the U.S. Department of Commerce of the number of jobs in Arizona directly related to export activities. In 1979, 45,350 individuals in Arizona held jobs directly related to export activities. The expansion of Arizona exports at

TABLE 3
ESTIMATES OF MAJOR ARIZONA MINERAL EXPORTS, 1977 and 1979
(000)

Product	1977			1979		
	Arizona ¹ Exports	Percentage ² of Arizona Production	Percentage of U.S. Exports	Arizona ¹ Exports	Percentage ² of Arizona Production	Percentage of U.S. Exports
Copper	\$127,577	10	62	\$277,500	15	65
Gold	10,000	70	9	30,762	6	1
Molybdenum	66,382	57	27	118,300	47	25
Silver	14,076	45	18	4,215	52	19
Total	\$218,035	16	21	\$430,777	16	16

Sources: ¹Arizona Office of Economic Planning and Development.

²Derived from *Minerals in the Economy of Arizona*. Bureau of Mines, U.S. Department of the Interior, 1977 and 1979.

³Derived from *Mineral Industry Surveys*. Bureau of Mines, U.S. Department of the Interior, 1977 and 1979.

TABLE 4
MAJOR ARIZONA AGRICULTURAL EXPORTS,
1977 and 1979

Commodity	1977		1979	
	Arizona Exports (000)	Percentage of U.S. Exports	Arizona Exports (1000 U.S. \$)	Percentage of U.S. Exports
Cotton	\$125,000	8	\$197,300	10
Citrus Fruits	20,000	2	41,200	4
Wheat and Flour	45,000	1	23,100	•
Cottonseed Oil	16,000	9	20,000	10
Hides and Skins	10,000	1	16,300	1
Feed Grains	15,000	•	13,500	•
Vegetables	13,000	2	13,000	2
Lard and Tallow	9,000	2	11,400	2
Meat	6,000	1	10,400	1
Other	26,000	1	25,500	1
Total	\$285,000	1	\$371,700	1

•Less than 1/2 of 1 percent.

Source: *Foreign Agricultural Trade of the United States*. Economics, Statistics and Cooperative Services, U.S. Department of Agriculture, February 1978 and March/April 1980.

TABLE 5
EXPORT-RELATED EMPLOYMENT IN
ARIZONA, 1977 and 1979

Sector	Number of Export-Related Jobs		Increase in Employment Per \$100,000 Increase in Exports
	1977	1979	
Agriculture	5,500	6,450	1.1
Manufacturing	18,400	24,000	1.5
Mining	3,400	3,900	0.2
Tourism	9,300	11,000	1.2
Total	36,600	45,350	1.1

Sources: Arizona Office of Economic Planning and Development and Phoenix District Office of the United States Department of Commerce. Column 3 calculated from Columns 1 and 2 and Table 1.

a rate higher than Arizona production thus indicates that exports have had a beneficial effect on employment opportunities for Arizona workers. According to the data presented in Table 5, export growth between 1977 and 1979 was responsible for the creation of 8,750 additional jobs in Arizona with over half of these in the manufacturing sector.

Table 5 also provides information on the number of additional jobs created by a \$100,000 increase in exports in each of the sectors. Employment in manufacturing is most responsive to increases in export sales with each

\$100,000 increase in exports creating 1.5 new employment opportunities. Since the average annual wage paid to manufacturing employees covered by Arizona unemployment compensation laws was \$15,468 in 1979, a \$100,000 increase in manufacturing exports leads directly to an increase of over \$23,000 in wages, increased tax revenues for the state, and higher sales and profits for businesses selling consumer goods and services. Tourism and agriculture follow close behind manufacturing in the job-creating effect of exports with 1.2 and 1.1 jobs created per \$100,000 increase in

exports. However, since wages in the service sector were only \$10,125 and \$8,322 in agriculture and forestry in 1979, the income-generating effect of export expansion in these sectors is correspondingly smaller than that in manufacturing. Mining had a much lower 0.23 jobs created per \$100,000 in increased exports. This is primarily due to the fact that between 1977 and 1979, the bulk of the increase in mineral exports was the result of increased prices rather than of an increased volume of production. Consequently, it is not surprising that the mining sector experienced large export increases with only a moderate increase in employment. Offsetting the low job-creation effect of mining exports is the relatively high annual wage of \$21,262 in this sector.

In evaluating the effect of export growth on Arizona incomes and employment, secondary effects should also be added to the direct effects discussed here. Greater employment opportunities and higher incomes provide greater demand by workers for housing and consumer goods and services which have job-creating effects throughout the state economy. Increased export-related incomes and profits also increase state revenues, thus leading to the expansion of public sector employment. Finally, because exports must be transported out of the state, export activities create job opportunities in transportation, communications, and banking.

CONCLUSIONS AND RECOMMENDATIONS

Exports play a vital role in the growth and welfare of the Arizona economy, with all sectors of the economy being dependent on foreign markets for a significant proportion of their sales. In keeping with the national trend, this dependence on foreign markets has grown in recent years. Nevertheless, if exports are to continue to play a positive role in Arizona's economic development, the following recommendations need to be considered:

- Arizona businesses, government, and educational institutions must work together to foster the innovation and labor skills that are necessary for sustained growth in high technology exports.

- More Arizona businesses, especially small firms, must increase their awareness of international trade opportunities and design appropriate marketing programs to address these export markets.

- Arizonans must become more involved in efforts to reduce foreign tariff and nontariff barriers that limit the trade potential of the state's export products, particularly agricultural commodities.

- A continued effort must be made to gather more and better data on Arizona's international activities so that better analyses and forecasts can be provided.

¹Phoenix Chamber of Commerce, *Directory of Arizona Manufacturers*, Phoenix, 1978.

²"Most Arizona Firms Afraid to Tap Export Market, Expert Says,"

The Arizona Republic, August 26, 1979, p.D-1.

³Arizona Office of Economic Planning and Development, *Arizona Exports: A Growth Sector for Arizona's Economy*, Phoenix, 1978.

International Banking in the 1980s: A Global and Regional Perspective

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International banking, both by U.S. and foreign banks, has grown rapidly in the past two decades, a boom that has been very profitable for its major participants. The major factor behind this growth has been the increasing interdependence of the world's economies, as reflected in the growth of world trade; the investment of multinational corporations; the economic development of poorer countries; and the imbalance in world payments, fueled by the Organization of Petroleum Exporting Countries (OPEC).

Naturally much of the increased payment flow associated with these events occurs through banks. Yet, such expansion carries with it both opportunities and risks.

The world marketplace is no longer the dollar dominated arena it once was. The face of U.S. banking and finance is changing fast, eroding the long-standing precepts about what constitutes a bank and a thrift

institution, the services they can offer, and where each can do business.

Coupled with this transformation of the domestic financial industry has been a flurry of foreign takeovers of U.S. banks. Foreign banks have over 300 U.S. branches and agencies of their home offices, accounting for 15 percent of U.S. business loans. At the end of the first quarter, 1980, 109 American banks had at least 10 percent foreign ownership; 26 are wholly foreign-owned.¹ More recent examples of this foreign influx include:

- Holland's Algemeen Bank's purchase of LaSalle National Bank, Chicago.
- British Midland Bank's \$820 million successful bid for California's Crocker National Bank.
- Hong Kong and Shanghai Banking Corporation's takeover of Marine Midland Bank of Buffalo, New York.
- Banque Nationale de Paris' acquisition of Bank of the West, San Jose, California.

Although the International Banking Act of 1978 (Table 1) has brought foreign and domestic banks nearer to a competitive par, the evolving role of regional banks in this international scenario remains clouded. The intent in this article is to shed some light on these emerging issues, especially from the perspective of banks in Arizona. In particular, the article addresses, in a global and regional context, the growth of international banking; major international banking activities; organizational approaches to international banking; and international banking prospects for the 1980s.

International banking activities have become increasingly important over the past twenty years. This growth is expected to slow somewhat during the 1980s, but the pattern may evolve from domination by a few banks to a more competitive market.

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TABLE 1

PROVISIONS OF THE INTERNATIONAL
BANKING ACT OF 1978

- Limits the interstate branching of foreign banks.
- Provides for federal licensing of branches and agencies of foreign banks.
- Authorizes Federal Reserve Board to impose reserve requirements on branches and agencies of foreign banks.
- Gives broader powers to Edge Act corporations to compete more effectively with foreign banks.
- Subjects foreign banks operating branches and agencies to the nonbanking prohibitions of the United States Bank Holding Company Act.

Source: *International Letter* Federal Reserve Bank of Chicago, May 22, 1981.

INTERNATIONAL BANKING EMERGES

During the nation's early years, most American banks were reluctant to go international, a consequence of America's isolationism at the time, as well as its limited role in international trade through the early 1900s. United States regulation was another obstacle to overseas banking. For example, any form of branch banking (by national banks) was prohibited before the passage of the Federal Reserve Act of 1913. Prior to this legislation, such traditional international banking activities as foreign exchange trading and the sale of letters of credit were pursued from domestic offices, with limited banking presence abroad.

Once the doors were opened to foreign branching by national banks, a few U.S. banks quickly responded. One of the more aggressive then (and now) was Citibank, which as early as 1918 had thirty-seven foreign offices. Additional impetus was provided by the Edge Act of 1919, which enabled United States banks to set up special subsidiaries (informally called "Edges") to engage in international activities generally not permitted domestically, such as:

- Accepting deposits from foreign parties
- Issuing or confirming letters of credit
- Creating bankers acceptances
- International lending
- Foreign exchange trading
- International investment banking

Although the enabling legislation of this Wilsonian era was a watershed for international banking, the emphasis by American banks upon such operations has

become increasingly important in the past two decades.² More American banks are involved in more countries via more branches with more loan activity than ever before (Table 2).

TABLE 2

FOREIGN BRANCHES OF U.S. BANKS

Year	U.S. Banks With Branches	Number of Branches	Total Assets of Overseas Branches (Billions) ^a
1965	13	211	\$ 8.9
1967	15	295	15.3
1969	53	459	35.3
1970	79	536	46.5
1971	91	583	59.8
1972	108	627	78.2
1973	122	697	121.9
1974	125	734	151.9
1975	126	762	176.5
1976	127	731	219.4
1977	124	730	258.9
1978	137	761	306.8
1979	139	779	364.2

^a Not adjusted for inflation.

Source: Christopher M. Korth, "The Evolving Role of U.S. Banks in International Finance," *The Bankers Magazine*, Jan. 1980, p. 69.

The sheer numbers of foreign bank branches may be misleading, however, in that the majority of U.S. international banking is conducted by a small group of the largest banks (the "majors," or money-center banks). Of the 139 banks with foreign branches, over 90 are no more than "shell branches" in offshore money markets (particularly tax havens). Of nearly 700 remaining branches, about 80 percent are offices of just nine major banks and over 200 are Citibank's alone.

International Banking on the Move: A Rationale

The reasons for the rise of international banking are straightforward—mainly to expand, protect, or stabilize the expected flows of future earnings. The search for profits has naturally been a major factor in the emphasis by U.S. banks upon foreign lending, which by 1979 had reached a half-trillion dollars. Few of the major banks have been disappointed in their quest. While their domestic earnings were relatively flat between 1970 and 1976, foreign net profits quadrupled to nearly \$1 billion in the same period. Indeed, foreign earnings accounted for nearly half of their total earnings in the mid-1970s, up from only 17 percent as late as 1970. The impact on earnings is especially significant for the money center banks, which derive roughly two-thirds of their income

abroad. For Citibank, that share reached as high as 82 percent in 1977.⁴

Beyond this profit lure, however, specific reasons for the rise of international banking differ markedly, and include:

- Comparative advantages in skills and resource transfers
- Defense of a domestic customer base
- Portfolio diversification
- Government regulation
- Chronic United States balance-of-payments deficits.

Some banks expand internationally because they feel their distinctive competence gives them a comparative advantage in a certain area, for example, where the marginal costs of servicing a customer's accounts abroad may be low due to the bank's prior knowledge of prospective needs. Special knowledge of certain types of projects or products will also make banks effective with competitors.

Regional banks often feel they are pushed into an international position in order to defend their domestic customer base. Larger regional and money center banks have been known to attract customers via their international services. In such cases smaller banks may find that the accommodation of existing customers' emerging international needs will be good survival strategy for the deregulated environment of the 1980s.

Portfolio considerations also motivate bank expansion abroad. Diversification can take place because loan demand and default patterns differ abroad. With an internationally diversified customer base and loan portfolio, a bank's cash flows can be desynchronized, with a corresponding reduction in income variability, and improved portfolio efficiency.

Of the five factors cited, the latter two—government regulation and balance-of-payments deficits—have been the most relevant in accelerating the migration of U.S. banks. United States capital controls during the mid-1960s (interest equalization tax, foreign direct investment regulations, and the voluntary foreign credit restraint program) pushed American banks abroad, and encouraged them to fund their overseas lending from foreign branches. At the same time, banks were hampered by deposit interest rate ceilings (Regulation Q) and disintermediation problems; they countered with foreign branches offering Eurodollar time deposits and certificates of deposit at rates competitive with alternative domestic (nondeposit) media.⁵ These developments, coupled with continuing OPEC problems of the 1970s, fueled a strong rise in

international deposits and aggravated a festering U.S. balance-of-payments problem. Such turbulence has spawned an array of organizational approaches to international banking.

THE CHOICE OF A FOREIGN ENTRY LINK

A bank's choice of organizational approaches to international banking will largely determine the range of services it provides, as well as its flexibility in pursuing international business.⁶ Foreign entry links include:

- An international department
- Shell branches and representative offices
- Edge Act and Agreement corporations
- Full service foreign branches
- Foreign equity investment

The choice is tempered largely by a bank's size, location and organizational culture.

Organizational Alternatives

A first step in tapping potential profits from international activities is establishing an international department, whereby a bank can offer the services necessary to attract customers with significant international activities. Should a local bank consider expanding international activities beyond headquarters, several choices are available. It must first decide whether to remain confined to U.S. borders, in which case it has the options of a domestic international office, an Edge Act subsidiary or an Agreement Corporation. If the bank chooses to locate abroad, it may do so via a shell branch, a representative office, a branch office (which implies a greater foreign presence), or direct investment in existing shares of a foreign bank.

Edge Act subsidiaries ("Edges") and Agreement Corporations are international banking organizations that may be located outside a bank's home state. They differ in several areas:

- Charter: Edges are chartered by Federal Reserve System, Agreements are chartered by states.
- Capitalization: Edges require \$2 million.
- Scope of activity: Agreement Corporations are restricted to international banking.

Both can engage only in domestic business that is incidental to world trade. Edges have been far more popular throughout the past two decades, primarily with the majors. Less than 4 percent of all Edges in existence at the end of 1979 were associated with

banks whose assets totaled less than \$2 billion. Apparently such regional banks have been discouraged by the one major drawback of Edges, which is expense, particularly capitalization and staffing. It would appear that some economies of scale, such as major wholesale banking operations, are necessary to justify such an expansion.

Banks desiring quasi-banking operations abroad can resort to shell branches and representative offices, the former being the cheapest and easiest way to get access to Eurocurrency markets. Shells are banking offices located abroad that have no contact with their local foreign market, in that their actual banking activities transpire at the U.S. head office. Most are located in tax havens such as Nassau and the Cayman Islands. As opposed to Edges, these shells appeal to both money center and regional banks. The Federal Reserve Board recently has posed the possibility of onshore shells, essentially a free-trade zone for banks seeking access to the Euromarkets and presently "windowed" offshore. Where a country prohibits direct foreign bank entry, or where potential business volume is too small to warrant a major investment, representative offices may be in order. These foreign loan production offices rely on a small staff, and though they cannot provide a full range of services, they are a relatively inexpensive way to establish a local presence.

The most flexible foreign banking vehicle available to a U.S. bank is a full-service foreign branch, essentially a legal extension and integral part of the bank, not requiring separate capitalization. Competitive advantages include the halo effect of the head office name; improved environmental scanning capability (gathering foreign credit information); and greater hedging potential (quick and easy funds transfer). Its largest drawback is expense, which can be prohibitive. Additionally, both home and host country legislation restrict locational choice, as well as the nature of legitimate activity. For example, Mexico prohibits such foreign branches, with the exception of Citibank's grandfathered presence. For such reasons, regionals have chosen to avoid or limit their foreign branching. In addition, the intense competition of most foreign money centers has served as a deterrent to all but the largest (money center) banks⁶ (see Table 3).

When local legislation, country risk, or expense precludes a foreign branch, banks may make a market entry by purchasing stock in a foreign bank or financial institution. The purchase can constitute majority ownership in the form of a subsidiary, or

TABLE 3

FOREIGN BRANCHES AND BANK SIZE
(December 31, 1979)

Total Domestic Assets (Billions)	Number of Banks	Percentage of Banks with Foreign Branches	Number of Branches
\$ 0-1.999	4	3.4	4
0-2.999	5	12.5	5
0-4.999	11	20.4	19
0-9.999	12	92.3	66
Over \$10.0	14	100.0	501
All Banks	46	0.3	595

Source: Richard Abrams, "The Role of Regional Banks in International Banking," Research Working Paper, Federal Reserve Bank of Kansas City, January, 1981, p. 11.

minority ownership as an affiliate. Either may be permitted to engage in activities its parent cannot, such as investment or merchant banking. Additionally, such equity participation can provide favorable tax treatment and reduce political risk. Drawbacks of such an arrangement include their limited operational flexibility with respect to foreign branches, as well as cross-cultural problems. Again, such regional bank stock purchases have been few; virtually all U.S. banks with foreign subsidiaries are located in the money centers.

In the past two decades, consortium banking is also an entry link alternative. Consortia are groups of very large banks representing various nationalities, which generally pool their resources and operate as a global network. Their advantages include economies of scale and risk pooling, as well as access to large multi-currency financing. Such activity is generally best suited for the world's largest international banks.

INTERNATIONAL BANKING ACTIVITIES:
SERVICES AND MEDIA

International banking activity can be broadly partitioned into payment (documentary) and financing (lending) services. Operationally, they are similarly segregated, in that the former is a labor- and paper-intensive pursuit whose profitability critically hinges on efficiencies and economics of scale. On this documentary front, banks engaged in international business can handle drafts, foreign collections, and remittances. Beyond these basic services, the extent of a bank's international commitment dictates whether it will move into such areas as foreign exchange

(FOREX), letters of credit (LCs), bankers' acceptances (BAs) or the Eurocurrency markets.

The logical evolution of international banking services typically begins with nonfunding or fee-earning services, i.e., LCs and foreign collections and payments. International payment services offered by banks in Arizona appear in Table 4. Once documentary skills have been mastered, funding services may be considered, initially including short-term acceptance financing and bank-to-bank lines. Medium-term export credit insurance might follow, using the services of the FCIA⁷ and EXIM bank⁸ to reinsure the credit and political risks of the transaction.

TABLE 4

SOME INTERNATIONAL PAYMENT SERVICES OF BANKS IN ARIZONA

Funds Transfer	- Payments and Collection Services - U.S. Dollar Drafts - Air Mail Payment Orders - Foreign Currency Drafts
Letters of Credit	- Issuance - Confirmation - Negotiation
Foreign Exchange	- Spot and Forward Trading - Foreign Currency Funds Transfer - Purchase and Sale of Bank Notes

Source: Developed by the authors.

Such programs are a genesis of foreign lending arrangements, transferring the principal risks, for a fee, to a government credit insurer. A bank may then move to uninsured export paper, buying the promissory note, draft, or foreign firm obligation from clients without any export insurance. International financing services offered by banks in Arizona include:

- Financing export accounts-receivable
- Export-Import (EXIM) bank loans
- Collections
- Acceptance discounting
- FCIA and EXIM-insured trade financing
- Factoring export receivables

The final and perhaps most challenging step in such an evolution is to participate in and/or syndicate project and sovereign risk credits. The political and financial risks implied in this potentially profitable aspect of international banking warrant detailed cost/benefit calculations, as well as the support and participation of executive management.

Spotlight on International Banking Media

The initial international involvement of most banks and the major thrust of local and emerging regional banks is trade finance, i.e., the issuance of LCs. Letters of credit expedite trade by allowing the bank to substitute its creditworthiness for that of the buyer. Although historically a mainstay of the majors, regional banks (assets less than \$2 billion) have recently entered this market. They attribute their success to more prompt and personalized services, especially to smaller exporters and importers.

Acceptance financing has also grown rapidly in recent years. A banker's acceptance (BA) is a time draft—essentially an order to pay a specified sum of money on a specified date, drawn on and "accepted" by a bank. When a bank accepts a draft, it assumes an absolute liability for making payment to the holder of the draft at its maturity. BAs are created primarily to finance the costs associated with carrying goods in transit or during temporary storage. They are short-term (money market) instruments, typically maturing in 90 to 120 days. A bank issuing such services earns fees by buying these drafts at discounts from maturity value. BAs are attractive sources of funds to large banks whose names are familiar in the brisk secondary market for such instruments. The smaller regionals, if lacking a well-developed correspondent network, cannot be fully rate-competitive in secondary markets. Though slowly shifting from the money centers (New York, Chicago, San Francisco) these Federal Reserve districts still account for over 85 percent of a market share of roughly \$55 billion.⁹

The importance of BAs in financing U.S. trade continues to increase, apparently reflecting a growing awareness of the advantages this form of credit offers to borrowers and banks as lenders. From the borrower's perspective, the effective interest rate on acceptances has been typically well below the prime lending rate, making this form of credit attractive, especially to "nonprime" borrowers. From the bank's standpoint, BAs, as a means of extending credit, meet the Federal Reserve requirements for "eligibility for rediscount" and can be readily resold in the secondary market. BAs thus permit the issuing bank to replenish its loanable funds without increasing its liabilities subject to reserve requirements.

Some banks, especially those with significant international dealings, find foreign exchange (FOREX) a profitable (and necessary) service to offer. The majors will often have dealers specializing in

specific currencies, and holding an open (net long or short) position. In such cases, a bank may receive FOREX profits if the currency in which it is long (or short) appreciates (or depreciates). Many banks will avoid such risk exposure and cover their open position, thereby maintaining an advisable net neutral monetary position. One must keep in mind that the primary role of FOREX services (and a market) is to transfer purchasing power, as well as to provide credit for international trade and serve as a means to minimize exchange rate exposure. Use of this hedging facility in a more speculative vein could be financially hazardous, as Franklin National learned the hard way, by incurring foreign exchange losses of \$40 million during the first half of 1974. At the time it was the twentieth largest bank with deposits of \$3 billion; it was subsequently rescued from its insolvent plight by European-American Bank.

The Euromarkets

The area of international banking that probably receives the greatest attention is the Euromarket, a network of banks that issue and accept foreign currency deposits. Estimates of its gross size range from \$300 billion to \$1 trillion. A Eurodollar is not a currency separate from a dollar in the United States; Eurodollar deposits are all ultimately traceable to some United States bank. They differ from their domestic money counterparts only in geographic location and in terms of the interest rates that may be paid relative to home-currency interest rates. The principal factors contributing to the rapid growth of the Eurodollar market have been the United States payments deficit problem and capital controls. A major advantage of this market, for company and customer alike, is its ability to denominate accounts in a hard currency while insulating them from government seizure. Additionally, many multinationals find it convenient to keep foreign currency deposits for trade payments. The Eurocurrency market may be said to serve three valuable purposes for international business: (1) an efficient and convenient money-market device to accommodate excess corporate liquidity; (2) a major source of working capital and trade financing; and (3) a useful vehicle for arbitrage purposes.

Regional bank activity in direct Eurocurrency loans, as well as syndications, has been limited. Realizing the uncertainty of this international lending path, banks in Arizona have focused on the Mexican and Pacific Basin markets, with little exposure to less-developed

countries (LDCs). Consequently, their loan loss experience has been minimal.

INTERNATIONAL BANKING PROSPECTS FOR THE 1980s

The rapid growth of U.S. international banking over the past twenty years will undoubtedly slow somewhat in the 1980s, particularly if a deregulated environment leads to equally rewarding domestic opportunities. American banks will continue to invest and expand overseas, but the patterns will likely change. For the majors, with large overseas commitments, there will be continuing effort to improve the quality of present operations abroad. Some seeking a greater economic balance may even shift their focus toward domestic operations.

The regionals are in a very different position. Though some are still smarting from ill-fated earlier ventures, many still have international ambitions. Given highly profitable domestic operations and a proportionately smaller share of the overseas market, they have the capacity to expand internationally on a more aggressive basis. It would seem that international banking may evolve from the closely held bastions of a few to the competitive free market of many. Changes in the world's political, economic and financial environment will continue to circumscribe the shape and scope of international banking. These include:

- A greater number of traders and intense competition in the international marketplace, as economic counterweights to the United States and Japan emerge.
- A continued shift of international reserves to LDCs.
- Wider currency fluctuations.
- A less important international role for the dollar.
- Foreign government restrictions and political constraints on international expansion.
- A long-awaited U.S. export expansion program.
- An enlarged access policy of the International Monetary Fund (IMF).
- Domestic free-trade zones (international banking facilities or IBFs) for banks, obviating "shells". Clearly, such developments pose both threats and opportunities to the international banking community.

As for Arizona's international banking activity, the prospects are very encouraging, the chief reason being an explosion of state exports. As of 1980, a total of 351 companies were partially or wholly engaged in

imports and exports, employing 40,000 people and including many well-known electronics firms. Most often, these companies deal with one of the state's three major trading partners—Japan, Canada and Southeast Asia, with a rapidly growing importance for Mexico. In 1978 one source ranked Arizona third among states in the percentage of manufactured goods

being exported.¹⁰ In addition, considerable export activity is represented by copper and farm crops, particularly cotton. Indeed, the steadily improving business climate for Arizona exporters, coupled with its incubator economy, bodes well for its international banking efforts, which will achieve considerable importance through the 1980s.

¹"Investing in the United States: A Survey," *The Economist*, Oct. 25, 1980, p. 19.

²Christopher M. Korth, "The Evolving Role of U.S. Banks in International Finance," *The Bankers Magazine*, Jan. 1980, p. 70.

³*Ibid.*, p. 71.

⁴Richard Abrams, "Regional Banks in International Banking," *Economic Review*, Federal Reserve Bank of Kansas City, November 1980, p. 4.

⁵Richard Abrams, "The Role of Regional Banks in International Banking," Research Working Paper, Federal Reserve Bank of Kansas City, January 1981, p. 13.

⁶*Ibid.*, p. 11.

⁷The Federal Credit Insurance Corporation is a privately owned export insurance company, specializing in insuring exporters against foreign credit and country risk for periods of up to five years.

⁸The EXIM Bank generally specializes in larger and longer term transactions, especially those involving capital goods; its guarantees help minimize both foreign credit and country risk.

⁹*International Letter*, Federal Reserve Bank of Chicago, April 10, 1981.

¹⁰D. McGowan, "Banks' International Departments Going Global With Arizona Exports," *The Arizona Republic*, January 6, 1980, p. C1.

The Arizona Business Scene



Nogales: Mexican Trade Center

Nogales is located on the Mexican border in south central Arizona, approximately sixty miles south of Tucson. Situated on hilly terrain at the edge of the Santa Cruz River Valley, its elevation of nearly 4,000 feet results in a climate that is cooler than in the urbanized desert areas, especially in the summer. Rainfall is sparse except during July and August.

Nogales is actually two cities, one on each side of the international border. The Mexican influence is prevalent on the American side with 85 percent of the Nogales respondents to the 1980 census identifying themselves as of Spanish origin. The Arizona city, which is the county seat of Santa Cruz County, had a population of 15,683 in the 1980 census, while the Mexican-side city is estimated to have a population of over 100,000. Both cities have been growing rapidly, with the Nogales, Arizona population increasing 75 percent from 1970 to 1980.

Nogales, Arizona grew rapidly after its founding in 1882, due to the growth in mining, military, and agricultural operations in the area. The growth of the entire area was spurred by the completion of the railroad in 1882. After 1920, however, mining and military operations were greatly reduced, as was agriculture, although to a lesser degree. The population of Santa Cruz County dropped from 12,700 in 1920 to a low of 9,300 in 1950. The recent population growth has been due to a rebound in agriculture and ranching, as well as a general broadening of the economic base to include trade, services, and manufacturing. Much of the expansion in these economic sectors relates to international trade.

Nogales is important as an import/export center for Mexican trade. One major group of products traded through Nogales is garden produce grown on Mexico's west coast. The irrigated west coast areas of the Mexican states of Sonora and Sinaloa are one of the two major sources of winter vegetables for the United States (Florida is the other source). Most of these Mexican-grown vegetables pass through Nogales on the way to American markets. Fifty-eight produce firms operate in Nogales, with as many as 45,000 truckloads of produce brought into the United States yearly.

The other major group of products traded in the United States yearly includes electrical equipment, machinery, and parts. Much of this trade activity relates to the twin plants concept, whereby an American firm locates an assembly plant on the Mexican side of the border, in order to take advantage of the availability of Mexican labor and relatively low wage rates. The firm typically has a plant on the American side as well to accommodate the complete manufacture and distribution of the product to American markets. Fifty-two firms in Nogales operate on the twin plants concept, with a payroll of \$31 million a year. Table 1 provides a history of the value of imports and exports passing through Nogales.

The current employment base of Nogales, Arizona is diversified, although much of the employment is related directly or indirectly to international trade. Unemployment in Nogales varies seasonally, with more workers required during the winter produce season than during the summer. In addition to U.S. citizens, a number of registered alien Mexicans work in Arizona.

TABLE 1

VALUE OF EXPORTS AND IMPORTS IN THE
NOGALES IMPORT DISTRICT
(Millions of dollars)

Year	Imports to United States	Exports to Mexico
1980 ^p	\$916.0	\$606.0
1979	836.2	507.0
1978	661.9	336.6
1977	511.5	321.9
1976	380.8	247.4
1975	314.7	241.0
1974	370.2	250.5
1973	348.1	177.5

^ppreliminary

Source: Department of Commerce, Foreign Trade Division.

Retail trade is the most important economic sector in Nogales, Arizona, as measured by employment. Approximately 30 percent of the local work force is employed in retail trade, about twice the statewide average. This sector is important in Nogales for two reasons: first, many residents of northern Mexico rely upon Nogales as their primary trade center; and second, Nogales receives heavy tourist business from Americans who come to shop on the Mexican side. Tourist expenditures in Santa Cruz County approximated \$39 million in the 1979-1980 fiscal year, much of which occurred in Nogales. (Nogales has 77 percent of the county's population.) Other tourist attractions in the area include the

historic Tubac Presidio, Tumacacori Mission, and numerous ghost towns. The natural attractions of mountains (Mt. Wrightson, north of Nogales, rises to over 9,000 feet), lakes (Pena Blanca Lake is west of Nogales and Patagonia Lake is northeast), and wildlife also draw visitors.

The service sector, which includes motels, health services, and business services, is the second largest employment sector in Nogales, with nearly 20 percent of the work force, which is approximately the same as the statewide average. Manufacturing employs approximately 10 percent of the work force, much of it tied to the twin plants concept. Wholesale trade also employs about 10 percent of the work force, twice the state average, a concentration due to the prominence of trade with Mexico, particularly in the produce industry.

Another 10 percent of the local work force is employed in government service, somewhat less than the statewide average. Much of this employment relates to county government and facilities at the international border. The other 20 percent of the work force is spread throughout the other employment sectors, with only small numbers employed in agriculture and construction. Total construction in Nogales was valued at an average of \$1.1 million per year from 1974 to 1978; recent information is not yet available.

Nogales is already one of the larger Arizona towns outside the metropolitan areas, comparable in size to Casa Grande, Lake Havasu City, and Prescott. As trade between the United States and Mexico continues to expand, Nogales is likely to continue to grow as well.

A Survey of Arizona Businesss Conditions

HAROLD FEARON

While the weather was heating up and setting new records in August, the Arizona economy was cooling down and operating at lower levels than in the earlier months of the summer, according to results from the monthly business survey of the Purchasing Management Association of Arizona and the Purchasing Management Association of Southern Arizona. For the first time since July, 1980, the three indicators of new orders, production, and employment all were negative. However, the price indicator continues to flash encouraging signals that progress is being made in bringing inflation down to a more reasonable level.

The purchasing business survey is beginning its twentieth year of consecutive monthly reporting on the current status of the Arizona economy. Data are gathered through a questionnaire sent at the close of each month to purchasing managers throughout the state, asking them to indicate the direction of activity—higher, unchanged, or lower—on six key indicators of economic activity in the month just ended. Since these purchasing managers deal daily with the forces of supply and demand, they are able to provide timely and accurate information on current business trends, which enables economic turning points to be spotted.

Prices paid for major purchased commodities rose at a somewhat higher rate than in July, but the increase still

was the second lowest of any month so far this year and well under almost all months during the past several years. Of the purchasing managers surveyed, 50 percent paid higher prices in August, 44 percent saw prices unchanged, while 6 percent said they paid lower prices in August than in July. The inflationary trend definitely has moderated since last February, although it will not ratchet down smoothly, and there will be months in which higher rates of upward price movement will be recorded. While the economy may never get to a zero inflation rate, at least it is moving in the right direction.

Delivery time on shipments from vendors continued to stretch out, consistent with the previous month, but at a fairly low rate. Longer delivery times on vendor shipments were reported by 21 percent of the purchasing managers, compared to 13 percent who received faster deliveries. The delivery-time increases have been very moderate beginning last February, and the increase rate has been gradually slowing, which is a further indication that the Arizona economy is not enjoying its normal expansion and is operating with unused capacity.

Inventory levels of purchased materials dropped again in August for the sixth consecutive month, and at a decrease rate consistent with July. Of the firms surveyed, 23 percent added to inventory, while a larger 35 percent cut stocks. As new order entries and production rates continue to decline, coupled with the current, very high interest rates, Arizona firms will further tighten their inventory policies and procedures and reduce inventory investment. While there is no indication that any

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massive inventory reduction is taking place, which would have a serious, dampening effect on the economy, Arizona firms are making concerted efforts to bring inventory in line with operating rates.

New orders received from customers dropped in August, reversing the previous month's increase. A higher new order rate was reported by 28 percent, but 37 percent said they received fewer new order bookings in August than in July. New orders from customers of Arizona firms have been coming in at only a marginal rate all through 1981, and August saw the second net decrease so far this year—June saw a net decrease also. This provides further evidence of softness in the economy.

Production declined again, for the second consecutive month, with 32 percent of the firms cutting output, compared to the 28 percent who raised production. The weakness in this indicator became evident in June in response to the flagging new order rate, and will continue until new orders begin to escalate.

Employment of Arizona firms dropped for the third month in a row; this was the fourth decline so far this year. Only 17 percent of the firms added to their work force, but a large 30 percent pared payrolls. The declines in June and July were small, but the August drop was the largest in over six years (since June, 1975), although it was almost equaled in July, 1980. This shows that, in light of the dull economic performance, Arizona firms now are beginning to take more drastic action to bring payrolls in line with declining production and new order rates.

As the third quarter ends, it is evident that the Arizona economy is feeling the effects of the sluggish economic performance being experienced nationally. While the Arizona economy has not yet deteriorated as badly as in some areas, there also are no signs that economic growth will recover dramatically in the next few months. The present slowdown is likely to continue for at least

the next few months and probably through the end of the year.

The results of the July and August purchasing surveys are shown in Tables 1 and 2.

TABLE 1
JULY PURCHASING SURVEY

Key Indicators	Percent of Purchasing Managers Indicating Each Response (July compared to June)		
	Higher	Same	Lower
Prices paid for major commodities	45	47	8
Delivery time from vendors	22	65	13
Purchased materials inventory level	24	38	38
New orders received	38	33	29
Production	30	37	33
Employment	21	55	24

Source: Purchasing Management Association of Arizona and Purchasing Management Association of Southern Arizona.

TABLE 2
AUGUST PURCHASING SURVEY

Key Indicator	Percent of Purchasing Managers Indicating Each Response (August compared to July)		
	Higher	Same	Lower
Prices paid for major commodities	50	44	6
Delivery time from vendors	21	66	13
Purchased materials inventory level	23	42	35
New orders received	28	35	37
Production	28	40	32
Employment	17	53	30

Source: Purchasing Management Association of Arizona and Purchasing Management Association of Southern Arizona.

ARIZONA SALES OF ELECTRICAL POWER

	June 1981	June 1980	One Year Percentage Change	June 1981	May 1981	One Month Percentage Change
Sales of Kilowatt Hours (Thousands)	3331.6	2878.9	15.7	3331.6	2656.7	25.4
	July 1981	July 1980	One Year Percentage Change	July 1981	June 1981	One Month Percentage Change
Sales of Kilowatt Hours (Thousands)	3695.3	3313.6	11.5	3695.3	3331.6	10.9

Doctoral Dissertation Abstract

COLLEGE OF BUSINESS ADMINISTRATION
ARIZONA STATE UNIVERSITY

Editor's Note: Our readers are often interested in research undertaken by doctoral candidates in the College of Business Administration at Arizona State University. Therefore, we occasionally include one or two abstracts of doctoral dissertations in Arizona Business. Readers who wish further information on any of these subjects may examine the complete dissertations in the ASU Hayden Library.

A MULTIPLE VARIABLE EVALUATION OF EMPLOYEE-BENEFIT REFERENCES

Peter William Stonebraker

This dissertation is aimed toward determining whether, and in what configuration, variable-benefit structures are desired by employees. This thrust is both critical and timely because benefits and compensation are an important and controllable-by-management factor of the human-resources input to productivity growth. The history and research of the employee-benefits field are reviewed and classified. That background then provides a framework for assessing benefit structures and benefit needs as potential contributors to productivity growth.

A survey instrument was developed to identify individual benefit preferences among both hourly and salaried employees. Additionally, the design was structured to test if the individual preferences were different, and which demographic variables were associated with those differences. The population considered was the approximately 4,500 full-time, permanent, and non-top-management employees of a mid-sized Southwestern industrial and utility firm. The surveyed group of 1,478 individuals yielded 485 prompt and usable responses.

The results, when measured by a total of twenty-one different chi-square tests, showed conclusively that overall employee-benefit preferences were different. When various categorizations of demographic variables and rankings of benefit options were considered together, some combinations were found to be the basis for significant differences in preference; but other combinations showed little differentiation. Longevity-related variables were shown by this research to have the greatest discriminative power; and the benefit options time off, retirement, Social Security, and dental and medical insurance were the basis of the greatest preference differences. These findings led to the conclusion that benefits could be appropriately designated as benefit-base components, optional-supplement components, and performance components.

Several design structures, unique in their application to the benefits field, are used to permit multiple iterative testing of ranked data and to convert individual ranking responses to group rankings. The findings of this research are compared with prior efforts; and, in most cases, prior research results are confirmed. This research effort strongly supports the case for variable-benefit structures, particularly in optional-supplement components, and offers suggestions for the subsequent research necessary to support this direction in the benefits field.

Peter William Stonebraker is a Major in the United States Army in the Office of the Provost Marshal. The chairman of his dissertation committee was Dr. William B. Wertker, Jr., Professor of Marketing.

Arizona Construction Activity: Quarterly Report

JAY Q. BUTLER

SECOND QUARTER

The indicators on construction activity are still contradictory. While some important data seem to suggest a continued weakening of activity, other data indicate that construction is doing no worse than marking time. The main negative factor continues to be high interest rates. This ongoing trend severely affects not only the cost of owning real estate but also the desire to acquire real estate, especially new homes.

Total construction activity for Arizona during the second quarter of 1981 showed 25,654 permits valued at \$75 million. This represents a 27 percent increase in number of issued permits (20,155 to 25,654) and a 48 percent increase in dollar value (\$51 million to \$75 million) from a year ago. Much of this increased activity occurred in Maricopa County, which had a 51 percent increase in permit activity (10,082 to 15,277 permits) and a 69 percent increase in dollar value (\$32 million to \$53 million) from the second quarter of 1980. Specific areas of construction activity are reported in Table 1 and in quarterly tables at the end of this report.

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Residential Sector

Maricopa County. During the second quarter, 4,603 permits for a total value of \$214 million were issued for single-family dwellings. As shown in Table 1, this represents a significant increase over previous levels of activity and is fairly comparable to boom years.

Given the past levels of activity, the increase would normally be good news, especially because it occurred in the residential sector of Maricopa County. Unfortunately, the motivating force was not economic. Rather, the increase was due to a desire to obtain permits before certain cities increased their development fees. On a month-by-month basis, the 4,603 permits were recorded as shown in Table 2.

The downturn continued into July, with only 743 single-family building permits, valued at \$34 million, being issued in Maricopa County. Unless economic conditions improve and interest rates decline, many of the issued permits will not be used since most builders will not construct any home unless it has been sold. Hence, the reported levels of activity must be viewed with a great deal of caution.

Figure 1 graphically portrays single-family sales and permit activity for the past seven quarters in Maricopa County. Generally, new home sales have been higher than permits, thus allowing builders to maintain control of their inventories. During the 1974-1975 downturn, the large supply of completed but unsold new homes created considerable problems for builders. It appears that inventory is not going to have a significant impact during the current downturn.

TABLE 1
ARIZONA CONSTRUCTION ACTIVITY
(Current Quarter, Previous Quarter, and One Year Ago)

	SINGLE FAMILY		APARTMENTS ¹		COMMERCIAL		OFFICE BUILDINGS ²		RETAIL STORES ³		INDUSTRIAL	
	Number	Dollar	Number	Dollar	Number	Dollar	Number	Dollar	Number	Dollar	Number	Dollar
	of Permits	Value	of Permits	Value	of Permits	Value	of Permits	Value	of Permits	Value	of Permits	Value
MARICOPA COUNTY												
2nd Quarter, 1981	4,603	213,586,214	118	125,933,675	80	39,522,246	125	30,441,995	134	28,518,419		
1st Quarter, 1981	3,698	164,882,153	112	47,391,440	69	20,775,857	108	24,167,645	117	32,689,989		
2nd Quarter, 1980	1,765	67,808,624	84	36,910,133	57	33,268,678	151	35,123,013	124	33,401,376		
PIMA COUNTY												
2nd Quarter, 1981	625	37,269,546	15	9,323,795	37	9,253,818	54	23,089,636	3	188,800		
1st Quarter, 1981	774	41,275,104	14	17,182,830	57	104,482,000	38	7,913,953	6	466,125		
2nd Quarter, 1980	737	35,784,733	12	8,698,200	61	31,240,255	12	1,436,994	4	2,438,546		
REST OF ARIZONA												
2nd Quarter, 1981	1,485	63,260,383	19	5,691,286	47	3,907,235	104	4,891,471	20	1,855,353		
1st Quarter, 1981	1,118	45,075,084	12	10,090,117	25	1,157,443	81	4,421,244	22	1,485,562		
2nd Quarter, 1980	1,301	45,336,268	6	1,873,206	47	5,244,066	87	3,908,823	20	2,786,390		
ARIZONA TOTAL												
2nd Quarter, 1981	6,713	314,116,143	152	140,948,756	164	52,683,299	283	58,423,102	157	30,562,572		
1st Quarter, 1981	5,590	251,232,341	138	74,664,447	151	126,415,300	227	36,502,842	145	34,641,676		
2nd Quarter, 1980	3,803	148,929,625	102	47,481,539	165	69,752,999	250	40,468,830	148	38,626,312		

¹Five or more housing units²Office, bank, medical, and professional buildings³Shopping centers and other mercantile buildings

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

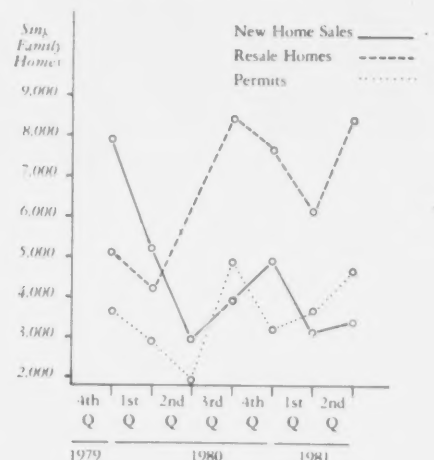
TABLE 2
SINGLE-FAMILY BUILDING PERMITS
(Second Quarter, 1981)

Month	Number of Permits	Dollar Value (Millions)
April	1,295	\$ 60
May	2,120	91
June	1,188	63
Total	4,603	\$214

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University.

Single-family resale activity has demonstrated strength throughout the seven quarters. Much of this activity is due to the use of alternative (seller) financing. Some evidence indicates that the ability to use seller financing may be reaching a peak, leading to a downturn or stagnation in sales. Furthermore, there is some interest in what the impact will be on the financing

FIGURE 1
SINGLE-FAMILY ACTIVITY*
MARICOPA COUNTY



*Includes townhouses and condominiums

Source: Marketron Data Services, Phoenix, Arizona

market when the seller financing becomes due in the next three to seven years.

All Other Arizona Counties. The rest of Arizona reported a positive pattern of single-family activity but no significant increases. Several counties reported good levels of activity: Coconino County with 256 permits valued at \$13 million; Yavapai County with 283 permits valued at \$17 million; and Navajo County with 219 permits valued at \$7 million. Pima County had a more predictable pattern with a 20 percent decline in issued permits (774 to 625 permits) and a 10 percent decrease in dollar value (\$41 million to \$37 million) from the first quarter of 1981.

While Maricopa County tends to dominate all aspects of construction activity, mobile home activity is stronger in other counties. As an example, 1,491 mobile home permits were issued in Maricopa County versus 1,589 issued in the rest of Arizona for the second quarter of 1981. Mohave, Pima, and Pinal counties are particularly important areas for mobile home activity. Historically, mobile homes have been strongest in the low income market (retired and transient). However, if the cost of more traditional housing should continue to increase, mobile homes could become more popular in Maricopa County.

Commercial Sector

Maricopa County. As shown in Table 1, the three main areas of commercial development are apartments, office buildings, and retail stores. As in new home development, many of the permits issued for apartment development were taken out to avoid increased development fees. This was especially evident in Mesa, with 34 permits valued at \$54 million. Again, there is serious doubt whether all of the issued permits will be acted upon, especially since there is concern that the market is currently overbuilt.

The office market continues to be a strong area of development, especially in the Central Avenue corridor and Camelback Road areas. Except in certain areas of new home development, concern appears to be increasing that the shopping center market is also on the verge of being overbuilt. Until evidence shows economic recovery that will support new business development, shopping center development will probably continue to be relatively slow.

All Other Arizona Counties. Because of smaller bases for economic activity, commercial development tends to be more stable. Apartment development was down from the first quarter of 1981 but above that level of one year

ago (see Table 1). Pima County continues to have some apartment development, with 15 permits valued at \$9 million.

With the exception of Pima County, the office building sector tends to be dominated by small structures valued under \$100,000. A similar pattern is shown for retail stores. Several recent studies have expressed the idea that some of the outlying areas (Yavapai and Coconino Counties) should show some strong levels of growth over the next ten years. Hence, commercial development is expected to demonstrate concurrent growth patterns.

Industrial Sector

Maricopa County. Although this sector is still a good performer, it has appeared to reach a plateau. Currently, the industrial news is mixed, with several companies announcing layoffs or moves from the area (Beckman Instruments and portions of Sperry Flight Systems), while others, especially Motorola, have announced expansion plans in the area. Although the future holds great promise for industrial expansion, there are still some concerns, especially in the supply of water and in housing costs. Although these problems are not strong deterrents, future growth may not be as vigorous or as continuous as in the past, or as is generally expected.

The Phoenix and Tempe areas continue to be popular locations for development. However, new developments should begin to expand to other areas, especially in the Mesa/Chandler areas and on the west side of Phoenix.

All Other Arizona Counties. Industrial development continues at relatively low and stable levels of activity (see Table 1). In the second quarter, Pima County reported three permits valued at \$188,800 and so far in 1981 only nine permits valued at \$654,925 have been issued. These levels are down significantly from 1980 when the IBM plant was being developed. Yavapai and Yuma counties reported increased industrial development.

LOOKING AHEAD

The year 1981 has been represented as a transitional market, bridging the recession market and a growth market. Because interest rates have remained higher than was commonly expected even a few months ago, the economy at midyear seems to be marking time. There is, however, growing concern about whether the economy is in transition to renewed growth or is showing signs of cumulative weakness.

The consensus forecast for the national economy calls for modest gains in the last part of 1981 with stronger economic growth through 1982—the main stimuli being the tax cuts and reduced inflation. Some pessimists, however, hold that the economy will grow only slightly through 1982 due to reduced government spending, especially at the local levels, and continuation of the restrictive monetary policy. They do not foresee economic recovery until there is broad recognition of substantially lower inflation and the impact of the recently passed tax revisions.

The differences in forecasts are due to the uncertainty of current events, particularly: (1) the impact of tax and budget cuts; (2) Federal Reserve monetary policy; (3) federal borrowing requirements; (4) the impact of increased defense spending on the budget and industrial capability, and (5) the economic viability of thrift institutions.

Concern is increasing that the tax cuts coupled with increased defense spending could offset other budget cuts. This would require increased borrowing that would lead to even higher interest rates or to no reduction in the current levels of interest rates. Although the Federal Reserve could relax its current restrictive monetary policy allowing interest rates to decline, this would ultimately increase inflation and drive interest rates back up. The Federal Reserve is expected to continue its current policy until there is a definitive decline in inflation and/or continued economic weakness—a recession.

A major obstacle to lower interest rates is continued business borrowing for financial merger activity and growing inventories, due to reduced sales activity. Furthermore, borrowing could increase even more in order to provide production capability for the expanded defense program. This activity could be detrimental to the entire real estate market. Even now, demand simply exceeds the current supply of credit. Concern is also

mounting about the viability of thrift institutions under current interest rates and economic conditions. Deposit costs continue to outgain interest income from mortgages and other investments. In summary, the current economic environment does not support a rapid decline in interest rates.

Although the recently passed Economic Recovery Tax Act of 1981 provides strong tax incentives (faster depreciation) for new developments, the current economic conditions would not support a high level of development, especially if the projects were expected to obtain reasonable economic viability in the short term. Hence, development activity will not significantly increase until economic conditions improve. If consumers spend their tax cuts instead of saving the money, the proposed economic remedies would take longer to revive the economy.

Although the Arizona economy is probably one of the strongest in the country, the underlying economic conditions do not portend any sustained growth until 1982. The longer the interest rates remain high and economic factors remain uncertain, the further in the future will be the recovery. Even now some discussion intimates that a strong housing recovery will not occur until 1983. Although there are some positive notes (especially in reference to the long-term outlook for inflation), the uncertainty, limited lending liquidity, and consumer wariness call for continued stagnation and/or downturn in construction activity and the real estate market.

While this is not a promising picture, many opportunities still exist for people with vision and creativity. The revitalized real estate market will have different financing programs, consumer expectations, and organizational forms. These need to be viewed as challenges that one must now prepare to confront and satisfy. Hence, the current market should be viewed not with pessimism but with optimism of confronting a growing and changing real estate market.

Arizona New Housing Starts: Quarterly Report

SECOND QUARTER, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
APACHE CO.	34	6	—	—	—	40
Eagar	9	—	—	—	—	9
St. Johns	1	6	—	—	—	7
Springerville	5	—	—	—	—	5
Unincorporated	19	—	—	—	—	19
COCHISE CO.	72	102	—	—	3	242
Benson	1	2	—	—	—	3
Bisbee	1	—	—	—	—	1
Douglas	8	—	—	—	2	32
Huachuca City	—	—	—	1	1	44
Sierra Vista	10	35	—	—	—	45
Tombstone	1	1	—	—	—	2
Unincorporated	45	62	—	—	—	107
Willcox	6	2	—	—	—	8
COCONINO CO.	257	183	14	—	1	474
Flagstaff	89	—	14	—	—	117
Fredonia	—	5	—	—	—	5
Page	10	37	—	—	—	47
Unincorporated	156	133	—	—	1	295
Williams	2	8	—	—	—	10
GILA CO.	132	80	—	—	—	212
Globe	6	—	—	—	—	6
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	42	35	—	—	—	77
Unincorporated	84	45	—	—	—	129
GRAHAM CO.	25	33	—	2	—	66
Pima	—	2	—	—	—	2
Safford	5	—	—	2	—	13
Thatcher	6	4	—	—	—	10
Unincorporated	14	27	—	—	—	41
GREENLEE CO.	7	—	—	—	—	7
Clifton	3	—	—	—	—	3
Duncan	—	—	—	—	—	—
Unincorporated	4	—	—	—	—	4
MARICOPA CO.	4,603	1,491	129	107	118	13,071
Avondale	1	—	—	16	—	65
Buckeye	3	3	—	—	—	6
Chandler	101	—	—	11	—	145
El Mirage	1	1	—	—	—	2
Gila Bend	3	—	—	—	—	3
Gilbert	43	—	1	—	—	45
Glendale	195	—	—	1	3	297
Goodyear	—	—	—	—	—	—
Guadalupe	1	—	—	—	—	1
Mesa	753	1,040	109	39	34	4,384
Paradise Valley	35	—	—	—	—	35
Peoria	64	—	3	—	—	70
Phoenix	1,847	101	9	14	53	5,591
Scottsdale	337	—	—	2	1	404
Surprise	2	3	—	—	—	5
Tempe	152	—	6	21	22	538
Tolleson	2	—	—	—	—	2
Unincorporated	1,056	343	1	3	5	1,471
Wickenburg	6	—	—	—	—	6
Youngtown	1	—	—	—	—	1

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
MOHAVE CO.	159	278	1	—	8	533
Kingman City	27	1	—	—	—	28
Kingman Area	21	85	—	—	—	106
Lake Havasu City ...	59	5	1	—	7	148
Lake Havasu Area ..	1	6	—	—	—	7
Mohave Valley N. ...	23	96	—	—	1	131
Mohave Valley S. ...	7	62	—	—	—	69
Dolan Springs	2	6	—	—	—	8
Sacramento Val.	9	14	—	—	—	23
Mohave General	10	3	—	—	—	13
NAVAJO CO.	219	85	—	—	—	304
Holbrook	3	—	—	—	—	3
Show Low	16	19	—	—	—	35
Snowflake	16	—	—	—	—	16
Taylor	7	8	—	—	—	15
Unincorporated	172	58	—	—	—	230
Winslow	5	—	—	—	—	5
PIMA CO.	625	354	26	18	15	1,457
Marana	1	2	1	—	—	5
Oro Valley	2	—	—	—	—	2
South Tucson	2	—	1	—	—	4
Tucson	194	178	24	18	15	846
Unincorporated	426	174	—	—	—	600
PINAL CO.	142	167	4	2	—	325
Apache Jct.	36	55	2	—	—	95
Casa Grande	26	—	—	—	—	26
Coolidge	8	5	—	—	—	13
Eloy	—	—	—	—	—	—
Florence	—	—	2	—	—	4
Kearny	1	2	—	—	—	3
Mammoth	5	—	—	—	—	5
Superior	2	—	—	—	—	2
Unincorporated	64	105	—	2	—	177
SANTA CRUZ CO. ...	37	1	3	—	—	44
Nogales	16	—	—	—	—	16
Patagonia	1	1	3	—	—	8
Unincorporated	20	—	—	—	—	20
YAVAPAI CO.	283	155	5	6	2	487
Chino Valley	10	20	—	—	—	30
Clarkdale	3	3	—	—	—	6
Cottonwood	5	6	—	—	—	11
Jerome	1	—	—	—	—	1
Prescott	48	8	1	4	1	86
Prescott Valley	37	22	2	1	—	66
Unincorporated	179	96	2	1	1	287
YUMA CO.	118	145	1	8	5	334
Parker	1	—	—	—	—	1
Somerton	33	2	—	—	—	35
Unincorporated	54	128	1	1	—	188
Wellton	1	—	—	—	—	1
Yuma	29	15	—	7	5	109
Total, Maricopa Co., 2nd Quarter, 1981 ..	4,603	1,491	129	107	118	13,071
Total, Maricopa Co., 2nd Quarter, 1980 ..	1,765	469	54	86	77	4,729
Percent Change	160	217	138	24	53	176
Total, Arizona, 2nd Quarter, 1981 ..	6,713	3,080	183	143	152	17,596
Total, Arizona, 2nd Quarter, 1980 ..	3,445	2,084	92	111	98	8,857
Percent Change	94	47	98	28	55	98

N/R: No report.

Arizona Building Permits: Quarterly Report

SECOND QUARTER, 1981

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE CO.	44	892,663	8	62,500	—	—	5	30,712	57	985,875
Eagar	9	343,500	1	50,000	—	—	—	—	10	393,500
St. Johns	7	N/C	—	—	—	—	2	N/C	9	N/C
Springerville	6	N/C	5	N/C	—	—	—	—	11	N/C
Unincorporated	22	549,163	2	12,500	—	—	3	30,712	27	592,375
COCHISE CO.	351	4,981,005	23	2,773,568	1	10,000	356	1,121,286	731	8,885,859
Benson	17	90,835	2	95,000	—	—	9	16,010	28	201,845
Bisbee	26	112,900	—	—	—	—	2	16,955	28	129,855
Douglas	33	752,970	4	758,544	—	—	61	159,096	98	1,670,610
Huachuca City	18	26,483	1	1,040,890	1	10,000	1	5,000	21	1,082,373
Sierra Vista	85	511,007	7	629,000	—	—	222	446,717	314	1,586,724
Tombstone	12	46,575	2	21,834	—	—	2	7,360	16	75,769
Unincorporated	143	3,215,570	3	220,000	—	—	43	449,240	189	3,884,810
Willcox	17	224,665	4	8,300	—	—	16	20,908	37	253,873
COCONINO CO.	697	16,039,717	22	2,394,527	2	160,430	133	796,324	854	19,390,998
Flagstaff	152	7,687,795	11	912,500	—	—	72	226,972	235	8,827,267
Fredonia	6	2,000	2	13,400	—	—	2	650	10	16,050
Page	68	623,864	—	—	2	160,430	10	8,200	80	792,494
Unincorporated	456	7,532,186	9	1,468,627	—	—	17	515,241	482	9,516,054
Williams	15	193,872	—	—	—	—	32	45,261	47	239,133
GILA CO.	310	4,008,980	12	430,364	—	—	121	254,665	443	4,694,009
Globe	15	190,107	—	—	—	—	17	36,105	32	226,212
Hayden	5	3,925	—	—	—	—	3	3,175	8	7,100
Miami	21	87,500	—	—	—	—	—	—	21	87,500
Payson	100	913,170	4	97,864	—	—	85	146,650	189	1,157,684
Unincorporated	169	2,814,278	8	532,500	—	—	16	68,735	193	3,215,513
GRAHAM CO.	122	1,588,903	10	231,700	—	—	14	532,050	146	2,352,653
Pima	3	60,000	1	25,000	—	—	—	—	4	85,000
Safford	41	319,140	6	172,700	—	—	10	528,250	57	1,020,090
Thatcher	22	369,420	—	—	—	—	3	1,600	25	371,020
Unincorporated	56	840,343	3	36,000	—	—	1	2,200	60	878,543
GREENLEE CO.	8	107,800	—	—	—	—	2	15,000	10	122,800
Clifton	3	N/C	—	—	—	—	1	N/C	4	N/C
Duncan	—	—	—	—	—	—	1	15,000	1	15,000
Unincorporated	5	107,800	—	—	—	—	—	—	5	107,800
MARICOPA CO.	8,376	231,257,549	832	221,813,468	134	28,518,419	5,935	50,849,803	15,277	532,439,239
Avondale	6	34,050	17	1,531,620	—	—	32	201,336	55	1,767,006
Buckeye	10	86,100	2	72,000	1	50,000	7	40,500	20	248,600
Chandler	196	3,038,576	23	4,266,170	2	155,500	424	1,673,509	645	9,133,755
El Mirage	12	46,600	—	—	—	—	4	167,900	16	214,500
Gila Bend	3	95,000	3	47,000	1	400,000	5	91,800	12	633,800
Gilbert	52	3,049,028	—	—	—	—	51	207,020	103	3,256,048
Glendale	285	7,311,697	32	4,043,940	—	—	711	3,507,705	1,028	14,863,342
Goodyear	—	—	1	80,000	4	721,200	38	215,412	43	1,016,612
Guadalupe	2	12,480	—	—	—	—	—	—	2	12,480
Mesa	2,009	35,341,272	143	71,439,500	6	771,064	1,011	7,498,489	3,169	115,050,325
Paradise Valley	85	5,050,858	—	—	—	—	104	698,475	189	5,749,333
Peoria	88	1,757,566	6	470,327	1	23,040	115	225,938	210	2,476,871
Phoenix	2,798	85,805,005	402	102,594,606	46	12,930,267	1,999	23,759,987	5,245	225,089,865
Scottsdale	438	23,013,237	24	16,185,216	2	785,148	577	4,341,092	1,041	44,324,693
Surprise	16	78,950	1	1,500	—	—	11	15,346	28	95,796
Tempe	301	10,176,800	96	16,041,900	69	9,982,200	230	2,495,100	696	38,696,000
Tolleson	18	56,701	—	—	—	—	11	139,160	29	195,861
Unincorporated	1,995	55,985,336	82	5,039,689	2	2,700,000	597	5,197,670	2,676	68,922,695
Wickenburg	6	231,440	—	—	—	—	—	—	6	231,440
Youngtown	56	86,853	—	—	—	—	8	373,364	64	460,217

Arizona Building Permits: Quarterly Report (Continued)

SECOND QUARTER, 1981	RESIDENTIAL*		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE CO.	783	10,644,256	69	4,646,293	—	—	705	1,409,637	1,557	16,700,186
Kingman City	69	1,133,914	12	227,312	—	—	23	97,490	104	1,458,716
Kingman Area	177	1,963,660	5	231,264	—	—	153	159,478	335	2,354,402
Lake Havasu City	105	2,695,410	18	2,814,881	—	—	68	335,882	191	5,846,173
Lake Havasu Area	16	166,135	1	29,280	—	—	15	27,600	32	223,015
Mohave Valley N	218	2,505,566	18	950,568	—	—	260	376,542	496	3,832,676
Mohave Valley S	117	1,184,485	11	308,796	—	—	108	161,124	236	1,654,405
Dolan Springs	18	110,448	1	27,648	—	—	20	9,662	39	147,758
Sacramento Val.	42	430,484	—	—	—	—	44	53,357	86	483,841
Mohave General	21	454,154	3	56,544	—	—	14	188,502	38	699,200
NAVAJO CO.	475	8,924,090	11	1,195,053	—	—	51	226,382	537	10,345,525
Holbrook	8	139,364	2	135,000	—	—	—	—	10	274,364
Show Low	54	764,513	2	179,400	—	—	33	160,808	89	1,104,721
Snowflake	16	N/C	—	—	—	—	1	N/C	17	N/C
Taylor	16	354,000	—	—	—	—	3	3,500	19	357,500
Unincorporated	356	7,370,063	4	836,153	—	—	9	40,824	369	8,247,040
Winslow	25	296,150	3	44,500	—	—	5	21,250	33	361,900
PIMA CO.	1,843	43,908,928	127	45,853,072	3	188,800	1,607	12,667,553	3,580	102,618,353
Marana	5	N/C	1	N/C	—	—	—	—	6	N/C
Oro Valley	3	195,500	—	—	—	—	2	5,000	5	200,500
South Tucson	32	258,386	—	—	1	3,000	7	2,400	40	263,786
Tucson	884	12,602,359	80	26,083,072	2	185,800	825	8,440,088	1,791	47,311,319
Unincorporated	919	30,852,683	46	19,770,000	—	—	773	4,220,065	1,738	54,842,748
PINAL CO.	443	6,057,157	33	1,684,474	5	183,468	246	3,984,545	727	11,909,644
Apache Junction	108	2,123,613	6	988,266	1	76,608	130	3,323,216	245	6,511,703
Casa Grande	57	1,545,902	13	439,019	4	106,860	25	296,581	99	2,188,362
Coolidge	43	233,061	—	—	—	—	6	22,400	49	255,461
Eloy	13	25,607	3	1,489	—	—	2	11,600	18	38,696
Florence	7	59,250	—	—	—	—	4	3,514	11	62,764
Kearny	5	42,500	—	—	—	—	1	4,000	6	46,500
Mammoth	7	130,350	—	—	—	—	—	—	7	130,350
Superior	11	51,800	—	—	—	—	6	6,300	17	58,100
Unincorporated	192	2,045,074	11	255,700	—	—	72	316,934	275	2,617,708
SANTA CRUZ CO.	68	1,640,955	2	22,000	2	225,000	35	886,334	107	2,774,289
Nogales	39	596,175	—	—	—	—	27	840,020	66	1,436,195
Patagonia	7	68,100	1	15,000	—	—	3	8,500	11	91,600
Unincorporated	22	976,680	1	7,000	2	225,000	5	37,814	30	1,246,194
YAVAPAI CO.	715	21,169,671	53	3,423,386	5	422,343	256	993,760	1,029	26,009,160
Chino Valley	52	617,483	4	121,000	1	1,343	15	7,552	72	747,178
Clarkdale	12	185,229	1	34,200	—	—	1	350	14	219,779
Cottonwood	54	300,810	7	205,000	—	—	13	114,473	74	620,283
Jerome	5	27,800	—	—	—	—	5	5,700	10	33,500
Prescott	129	2,779,937	21	1,680,596	—	—	129	329,251	279	4,789,784
Prescott Valley	81	1,405,962	6	223,960	1	16,000	—	—	88	1,645,922
Unincorporated	382	15,852,450	14	1,158,630	3	405,000	93	536,634	492	17,952,714
YUMA CO.	469	9,160,712	25	2,477,769	5	854,112	100	1,316,470	599	13,809,063
Parker	5	47,160	2	45,000	2	45,000	3	14,200	12	151,360
Somerton	40	1,751,646	1	8,400	—	—	1	1,000	42	1,761,046
Unincorporated	277	5,257,923	4	245,380	2	804,870	39	755,230	322	7,063,403
Wellton	2	34,200	1	5,000	—	—	—	—	3	39,200
Yuma	145	2,069,783	17	2,173,989	1	4,242	57	546,040	220	4,794,054
Total, Maricopa Co. 2nd Quarter, 1981	8,376	231,257,549	832	221,813,468	134	28,518,419	5,935	50,849,803	15,277	532,439,239
Total Maricopa Co. 2nd Quarter, 1980	4,518	79,844,790	738	154,559,233	128	35,247,376	4,698	65,394,824	10,082	315,046,223
Percent Change	85	189	12	64	4	-19	26	-22	51	69
Total Arizona 2nd Quarter, 1981	14,704	360,382,386	1,227	287,008,174	157	30,562,572	9,566	75,084,521	25,654	753,037,653
Total Arizona 2nd Quarter, 1980	11,108	183,386,829	1,128	191,132,399	153	40,560,612	7,766	91,945,980	20,155	507,025,820
Percent Change	32	96	8	50	2	-24	23	-18	27	-48

*Includes mobile homes N/C: not collected

NOTICE

Starting with the next issue of *Arizona Business*, Arizona New Housing Starts and Arizona Building Permits will be published on a quarterly basis only. Monthly data may be obtained upon special request by writing to:

Building Permit Data
Bureau of Business and Economic Research
College of Business Administration
Arizona State University
Tempe, AZ 85287

Telephone requests will also be accepted. Call Lani Collins or Ann Beard, (602) 965-3961.

Please indicate whether you wish to receive regular monthly reports or the data for only one month.

Arizona New Housing Starts: Monthly Report

JUNE, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
APACHE CO.	5	1	—	—	—	6
Eagar	—	—	—	—	—	—
St. Johns	—	1	—	—	—	1
Springerville	—	—	—	—	—	—
Unincorporated	5	—	—	—	—	5
COCHISE CO.	26	32	—	—	—	58
Benson	1	—	—	—	—	1
Bisbee	1	—	—	—	—	1
Douglas	3	—	—	—	—	3
Huachuca City	—	—	—	—	—	—
Sierra Vista	5	3	—	—	—	8
Tombstone	—	—	—	—	—	—
Unincorporated	14	27	—	—	—	41
Wilcox	2	2	—	—	—	4
COCONINO CO.	96	71	1	—	—	169
Flagstaff	34	—	1	—	—	36
Fredonia	—	2	—	—	—	2
Page	3	17	—	—	—	20
Unincorporated	59	47	—	—	—	106
Williams	—	5	—	—	—	5
GILA CO.	55	28	—	—	—	83
Globe	1	—	—	—	—	1
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	18	10	—	—	—	28
Unincorporated	36	18	—	—	—	54
GRAHAM CO.	5	9	—	—	—	14
Pima	—	—	—	—	—	—
Safford	1	—	—	—	—	1
Thatcher	2	2	—	—	—	4
Unincorporated	2	7	—	—	—	9
GREENLEE CO.	3	—	—	—	—	3
Clifton	2	—	—	—	—	2
Duncan	—	—	—	—	—	—
Unincorporated	1	—	—	—	—	1
MARICOPA CO.	1,188	1,217	106	52	48	5,031
Avondale	—	—	—	6	—	24
Buckeye	3	2	—	—	—	5
Chandler	11	—	—	—	—	11
El Mirage	—	—	—	—	—	—
Gila Bend	3	—	—	—	—	3
Gilbert	10	—	—	—	—	10
Glendale	54	—	—	—	3	152
Goodyear	—	—	—	—	—	—
Guadalupe	—	—	—	—	—	—
Mesa	451	1,040	102	29	26	3,697
Paradise Valley	10	—	—	—	—	10
Peoria	19	—	—	—	—	19
Phoenix	159	54	2	4	3	267
Scottsdale	66	—	—	2	—	73
Surprise	—	—	—	—	—	—
Tempe	74	—	2	10	11	248
Tolleson	—	—	—	—	—	—
Unincorporated	326	121	—	1	5	510
Wickenburg	2	—	—	—	—	2
Youngtown	—	—	—	—	—	—

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
MOHAVE CO.	43	90	—	—	2	170
Kingman City	8	—	—	—	—	8
Kingman Area	3	30	—	—	—	33
Lake Havasu City ...	13	2	—	—	2	52
Lake Havasu Area ..	1	—	—	—	—	1
Mohave Valley N. ...	7	31	—	—	—	38
Mohave Valley S. ...	3	17	—	—	—	20
Dolan Springs	—	3	—	—	—	3
Sacramento Val.	3	5	—	—	—	8
Mohave General	5	2	—	—	—	7
NAVAJO CO.	69	31	—	—	—	100
Holbrook	2	—	—	—	—	2
Show Low	1	8	—	—	—	9
Snowflake	3	—	—	—	—	3
Taylor	1	3	—	—	—	4
Unincorporated	60	20	—	—	—	80
Winslow	2	—	—	—	—	2
PIMA CO.	243	126	9	3	10	674
Marana	1	—	—	—	—	1
Oro Valley	—	—	—	—	—	—
South Tucson	1	—	—	—	—	1
Tucson	71	52	9	3	10	428
Unincorporated	170	74	—	—	—	244
PINAL CO.	39	56	2	—	—	99
Apache Jct.	9	15	—	—	—	24
Casa Grande	5	—	—	—	—	5
Coolidge	6	—	—	—	—	6
Eloy	—	—	—	—	—	—
Florence	—	—	2	—	—	4
Kearny	—	1	—	—	—	1
Mammoth	1	—	—	—	—	1
Superior	1	—	—	—	—	1
Unincorporated	17	40	—	—	—	57
SANTA CRUZ CO. ...	8	—	2	—	—	12
Nogales	4	—	—	—	—	4
Patagonia	1	—	2	—	—	5
Unincorporated	3	—	—	—	—	3
YAVAPAI CO.	94	49	1	—	—	145
Chino Valley	5	4	—	—	—	9
Clarkdale	—	2	—	—	—	2
Cottonwood	3	3	—	—	—	6
Jerome	1	—	—	—	—	1
Prescott	18	5	—	—	—	23
Prescott Valley	15	11	1	—	—	28
Unincorporated	52	24	—	—	—	76
YUMA CO.	37	52	1	1	—	95
Parker	—	—	—	—	—	—
Somerton	15	2	—	—	—	17
Unincorporated	6	43	1	1	—	55
Wellton	1	—	—	—	—	1
Yuma	15	7	—	—	—	22
Total, Maricopa Co., June, 1981	1,188	1,217	106	52	48	5,031
Total, Maricopa Co., June, 1980	909	160	31	25	54	2,189
Percent Change	30	660	241	107	-11	129
Total, Arizona, June, 1981	1,911	1,762	122	56	60	6,659
Total, Arizona, June, 1980	1,694	707	38	33	59	3,944
Percent Change	12	149	221	69	1	68

N/R: No report.

Arizona Building Permits: Monthly Report

JUNE, 1981

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE CO.	8	154,100	3	2,500	—	—	2	3,212	13	159,812
Eagar	—	—	—	—	—	—	—	—	—	—
St. Johns	1	N/C	—	—	—	—	1	N/C	2	N/C
Springerville	1	N/C	—	—	—	—	—	—	3	N/C
Unincorporated	6	154,100	1	2,500	—	—	1	3,212	8	159,812
COCHISE CO.	99	1,701,569	9	597,544	—	—	136	547,472	244	2,846,585
Benison	2	44,500	1	12,000	—	—	4	12,135	7	68,635
Bisbee	7	71,300	—	—	—	—	—	—	7	71,300
Douglas	11	248,463	2	58,344	—	—	21	67,611	34	374,418
Huachuca City	3	11,500	—	—	—	—	1	5,000	4	16,500
Sierra Vista	18	258,606	2	340,000	—	—	79	194,904	99	793,510
Tombstone	1	500	—	—	—	—	—	—	1	500
Unincorporated	50	985,400	2	180,000	—	—	23	256,422	75	1,421,822
Willcox	7	81,300	2	7,200	—	—	8	11,400	17	99,900
COCONINO CO.	256	5,287,071	7	1,539,722	1	72,930	51	474,303	315	7,374,026
Flagstaff	50	2,167,583	3	549,000	—	—	25	52,954	78	2,769,537
Fredonia	2	N/C	1	12,000	—	—	—	—	3	12,000
Page	23	208,031	—	—	1	72,930	3	200	27	281,161
Unincorporated	175	2,847,473	3	978,722	—	—	6	411,129	184	4,237,324
Williams	6	63,984	—	—	—	—	17	10,020	23	74,004
GILA CO.	111	1,436,846	5	224,500	—	—	37	111,755	153	1,773,101
Globe	4	42,707	—	—	—	—	5	7,800	9	50,507
Hayden	1	1,800	—	—	—	—	—	—	1	1,800
Miami	10	45,800	—	—	—	—	—	—	10	45,800
Payson	32	350,351	—	—	—	—	26	79,355	58	429,906
Unincorporated	64	996,188	5	224,500	—	—	6	24,400	75	1,245,088
GRAHAM CO.	45	357,193	5	38,400	—	—	4	475,600	54	871,193
Pima	—	—	—	—	—	—	—	—	—	—
Safford	19	125,900	3	3,400	—	—	3	475,100	25	604,400
Thatcher	7	97,000	—	—	—	—	1	500	8	97,500
Unincorporated	19	134,293	2	35,000	—	—	—	—	21	169,293
GREENLEE CO.	4	21,800	—	—	—	—	—	—	4	21,800
Clifton	2	N/C	—	—	—	—	—	—	2	N/C
Duncan	—	—	—	—	—	—	—	—	—	—
Unincorporated	2	21,800	—	—	—	—	—	—	2	21,800
MARICOPA CO.	3,128	71,606,582	379	90,607,983	43	11,653,962	1,976	19,140,351	5,526	193,008,878
Avondale	—	—	7	901,620	—	—	20	62,050	27	963,670
Buckeye	8	85,300	2	72,000	—	—	3	28,728	13	186,028
Chandler	45	478,333	4	157,500	—	—	133	537,148	182	1,172,981
El Mirage	2	2,500	—	—	—	—	1	42,000	3	44,500
Gila Bend	3	95,000	—	—	—	—	—	—	3	95,000
Gilbert	14	1,473,988	—	—	—	—	29	98,843	43	1,572,831
Glendale	71	2,118,834	12	2,455,400	—	—	217	1,674,599	300	6,248,833
Goodyear	—	—	—	—	—	—	8	119,119	8	119,119
Guadalupe	—	—	—	—	—	—	—	—	—	—
Mesa	1,624	22,460,133	79	58,462,621	4	383,000	355	3,837,011	2,062	85,142,765
Paradise Valley	30	1,558,950	—	—	—	—	39	214,222	69	1,773,172
Peoria	25	575,952	4	250,907	1	23,040	35	73,335	65	923,234
Phoenix	472	10,604,523	174	9,938,301	12	5,767,974	654	9,395,658	1,312	35,706,456
Scottsdale	88	5,397,524	9	8,689,545	2	785,148	179	1,027,990	278	15,900,207
Surprise	3	14,450	—	—	—	—	3	1,460	6	15,910
Tempe	125	5,005,000	37	6,328,300	23	3,194,800	64	602,100	249	15,130,200
Tolleson	8	7,356	—	—	—	—	2	9,597	10	16,953
Unincorporated	587	21,664,431	51	3,351,789	1	1,500,000	228	1,273,127	867	27,789,347
Wickenburg	2	48,640	—	—	—	—	—	—	2	48,640
Youngtown	21	15,668	—	—	—	—	6	143,364	27	159,032

JUNE, 1981

Arizona Building Permits: Monthly Report (Continued)

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE CO	236	3,115,682	20	1,487,638	—	—	223	380,407	479	4,983,727
Kingman City	21	351,921	6	90,006	—	—	7	5900	34	447,827
Kingman Area	54	565,418	1	27,648	—	—	53	62,546	108	655,612
Lake Havasu City	27	582,088	6	1,196,004	—	—	23	112,340	56	1,890,432
Lake Havasu Area	6	69,632	—	—	—	—	7	5,520	13	75,152
Mohave Valley N	67	795,532	5	134,688	—	—	86	112,909	158	1,043,129
Mohave Valley S	31	344,079	1	24,172	—	—	21	29,556	53	397,807
Dolan Springs	6	34,412	—	—	—	—	5	4,304	11	38,716
Sacramento Val	14	146,118	—	—	—	—	14	23,660	28	169,778
Mohave General	10	226,482	1	15,120	—	—	7	23,672	18	265,274
NAVAJO CO	185	2,981,870	5	824,844	—	—	24	8,600	214	3,815,314
Holbrook	6	91,464	—	—	—	—	—	—	6	91,464
Show Low	25	71,910	—	—	—	—	19	—	44	71,910
Snowflake	3	N/C	—	—	—	—	1	N/C	4	N/C
Taylor	4	50,000	—	—	—	—	—	—	4	50,000
Unincorporated	141	2,662,396	2	780,544	—	—	2	8,600	145	3,451,540
Winslow	6	106,100	3	44,500	—	—	2	—	11	150,600
PIMA CO	662	18,545,279	54	25,619,445	1	3,000	548	5,346,800	1,265	49,514,524
Marana	1	N/C	—	—	—	—	—	—	1	N/C
Oro Valley	—	—	—	—	—	—	2	5,000	2	5,000
South Tucson	5	37,060	—	—	1	3,000	5	1,600	11	41,660
Tucson	296	4,406,236	29	11,914,445	—	—	306	3,739,895	631	20,060,576
Unincorporated	360	14,101,983	25	13,705,000	—	—	235	1,600,305	620	29,407,288
PINAL CO	138	1,405,029	9	1,166,521	2	123,696	95	3,372,206	244	6,067,452
Apache Junction	29	475,556	4	833,266	1	76,608	39	3,043,813	73	4,429,243
Casa Grande	12	293,248	2	331,766	1	47,088	13	118,433	28	790,535
Coolidge	14	86,661	—	—	—	—	—	—	14	86,661
Eloy	4	4,700	3	1,489	—	—	—	—	7	6,189
Florence	5	58,500	—	—	—	—	2	1,439	7	59,939
Kearny	1	N/C	—	—	—	—	1	4,000	2	4,000
Mammoth	2	15,050	—	—	—	—	—	—	2	15,050
Superior	4	9,900	—	—	—	—	—	—	4	9,900
Unincorporated	67	461,414	—	—	—	—	40	204,521	107	665,935
SANTA CRUZ CO	21	435,675	2	22,000	—	—	7	457,870	30	915,545
Nogales	13	168,075	—	—	—	—	5	450,870	18	618,945
Patagonia	4	45,600	1	15,000	—	—	1	4,000	6	64,600
Unincorporated	4	222,000	1	7,000	—	—	1	3,000	6	232,000
YAVAPAI CO	240	5,954,069	19	688,420	3	56,343	101	602,039	363	7,300,871
Chino Valley	17	254,580	—	—	1	1,345	6	2,279	24	258,202
Clarkdale	8	22,169	—	—	—	—	—	—	8	22,169
Cottonwood	18	130,897	1	24,000	—	—	8	78,968	27	233,865
Jerome	3	27,200	—	—	—	—	1	1,200	4	28,400
Prescott	47	1,187,403	9	185,190	—	—	50	130,590	106	1,503,183
Prescott Valley	40	637,972	2	45,800	—	—	—	—	42	683,772
Unincorporated	107	3,693,848	7	433,430	2	55,000	36	389,002	152	4,571,280
YUMA CO	150	3,082,135	3	432,171	—	—	30	343,266	183	3,857,572
Parker	1	10,000	—	—	—	—	1	10,000	2	20,000
Somerton	18	807,417	—	—	—	—	1	1,000	19	808,417
Unincorporated	72	1,109,748	1	71,040	—	—	12	220,619	85	1,401,407
Wellton	1	32,200	—	—	—	—	—	—	1	32,200
Yuma	58	1,122,770	2	361,131	—	—	16	111,647	76	1,595,548
Total Maricopa Co June, 1981	3,128	71,606,582	379	90,607,983	43	11,653,962	1,976	19,140,351	5,526	193,008,878
Total Maricopa Co June, 1980	1,894	37,377,794	297	46,149,846	55	9,412,782	1,151	36,300,766	3,757	129,241,188
Percent Change	65	91	27	96	-21	23	71	-47	47	49
Total Arizona, June, 1981	5,283	116,084,900	520	123,251,688	50	11,909,931	3,234	31,263,881	9,087	282,510,400
Total Arizona, June, 1980	4,051	79,497,501	385	79,671,776	64	11,884,328	2,678	46,751,367	7,178	217,624,572
Percent Change	30	46	35	54	-21	—	20	-33	26	29

*Includes mobile homes

N. C. Not collected

JULY, 1981

Arizona Building Permits: Monthly Report

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
APACHE CO.	20	517,150	2	34,000	—	—	3	335,000	25	886,150
Eagar	4	140,000	2	34,000	—	—	—	—	6	174,000
St. Johns	1	—	—	—	—	—	1	—	2	—
Springerville	3	—	—	—	—	—	1	—	4	—
Unincorporated	12	377,150	—	—	—	—	1	335,000	13	712,150
COCHISE CO.	93	1,280,384	7	1,171,700	1	23,256	118	842,658	219	3,317,998
Benson	7	69,100	—	—	—	—	6	4,149	13	73,249
Bisbee	10	15,000	—	—	—	—	2	485,000	12	500,000
Douglas	13	190,435	—	—	—	—	22	40,970	35	231,405
Huachuca City	3	3,500	—	—	—	—	—	—	3	3,500
Sierra Vista	18	108,411	2	413,000	—	—	70	122,114	90	643,525
Tombstone	3	76,000	1	7,500	1	23,256	3	1,095	8	107,851
Unincorporated	35	741,738	4	751,200	—	—	13	188,330	52	1,681,268
Willcox	4	76,200	—	—	—	—	2	1,000	6	77,200
COCONINO CO.	215	3,967,894	15	1,101,053	—	—	56	60,954	286	5,129,901
Flagstaff	34	1,497,645	7	378,516	—	—	38	53,454	79	1,929,615
Fredonia	1	1,000	—	—	—	—	1	300	2	1,300
Page	25	68,747	2	216,285	—	—	6	—	33	285,032
Unincorporated	150	2,366,851	6	506,252	—	—	5	3,500	161	2,876,603
Williams	5	33,651	—	—	—	—	6	3,700	11	37,351
GILA CO.	77	1,447,533	5	139,900	1	—	39	123,408	122	1,710,841
Globe	2	48,095	2	39,900	—	—	4	9,400	8	97,395
Hayden	—	—	—	—	—	—	—	—	—	—
Miami	1	1600	—	—	—	—	2	1,700	3	3,300
Payson	30	431,090	2	—	1	—	28	23,808	61	454,898
Unincorporated	41	966,748	1	100,000	—	—	5	88,500	50	1,155,248
GRAHAM CO.	42	304,916	5	38,050	1	15,000	5	37,690	53	395,656
Pima	—	—	—	—	—	—	—	—	—	—
Safford	11	61,600	4	36,050	—	—	5	37,690	20	135,340
Thatcher	11	73,950	—	—	—	—	—	—	11	73,950
Unincorporated	20	169,366	1	2,000	1	15,000	—	—	22	186,366
GREENLEE CO.	5	100,000	—	—	—	—	1	800	6	100,800
Clifton	2	—	—	—	—	—	—	—	2	—
Duncan	—	—	—	—	—	—	—	—	—	—
Unincorporated	3	100,000	—	—	—	—	1	800	4	100,800
MARICOPA CO.	1,494	37,251,646	297	49,585,980	58	17,728,514	1,545	20,025,356	3,394	124,591,496
Avondale	1	25,920	—	—	—	—	12	31,119	13	57,039
Buckeye	2	1,000	—	—	—	—	11	45,400	13	46,400
Chandler	68	433,565	8	987,580	1	273,400	100	1,473,890	177	3,168,435
El Mirage	—	—	—	—	—	—	—	—	—	—
Gila Bend	—	—	—	—	—	—	—	—	—	—
Gilbert	13	316,320	2	180,000	—	—	8	24,850	23	521,170
Glendale	104	3,168,594	10	381,300	3	601,000	188	911,437	305	5,062,331
Goodyear	—	—	—	—	—	—	3	10,550	3	10,550
Guadalupe	4	8,980	—	—	—	—	—	—	4	8,980
Mesa	58	1,545,663	1	200,000	1	50,000	299	6,403,470	359	8,199,133
Paradise Valley	19	907,080	4	244,000	—	—	17	160,060	40	1,311,140
Peoria	27	567,477	1	29,500	1	830,750	24	55,027	53	1,482,754
Phoenix	425	8,752,805	200	41,776,503	23	8,765,864	489	8,351,842	1,137	67,647,014
Scottsdale	129	6,007,835	29	2,566,897	—	—	151	918,867	309	9,493,599
Surprise	4	6,450	—	—	—	—	5	41,010	9	47,460
Tempe	209	7,420,000	28	1,157,000	28	7,172,500	54	646,500	319	16,396,000
Tolleson	3	45,150	2	825,000	—	—	3	1,400	8	871,550
Unincorporated	411	8,031,921	12	1,238,200	1	35,000	178	933,534	602	10,238,655
Wickenburg	—	—	—	—	—	—	1	10,000	1	10,000
Youngtown	17	12,886	—	—	—	—	2	6,400	19	19,286

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Arizona Building Permits: Monthly Report (Continued)

	RESIDENTIAL		COMMERCIAL		INDUSTRIAL		OTHER		TOTAL	
	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value	Number of Permits	Dollar Value
MOHAVE CO.	218	2,997,731	17	4,291,801	—	—	174	501,998	409	7,791,530
Kingman City	20	408,822	3	54,700	—	—	8	13,570	31	477,092
Kingman Area	52	540,191	2	105,600	—	—	33	29,946	87	675,737
Lake Havasu City	22	504,599	11	4,069,293	—	—	20	272,096	53	4,845,988
Lake Havasu Area	2	40,520	—	—	—	—	5	5,992	7	46,312
Mohave Valley N	62	887,567	1	62,208	—	—	74	128,184	137	1,077,959
Mohave Valley S	33	366,476	—	—	—	—	19	30,758	52	397,234
Dolan Springs	12	94,975	—	—	—	—	7	6,522	19	101,497
Sacramento Val	9	61,404	—	—	—	—	7	10,130	16	71,534
Mohave General	6	93,377	—	—	—	—	1	4,800	7	98,177
NAVAJO CO.	148	2,456,617	2	27,144	6	17,500	7	21,568	163	2,522,829
Holbrook	1	1,500	—	—	—	—	—	—	1	1,500
Show Low	22	140,800	—	—	6	17,500	—	—	28	158,300
Snowflake	4	—	—	—	—	—	—	—	4	—
Taylor	6	12,200	—	—	—	—	—	—	6	12,200
Unincorporated	107	2,161,017	2	27,144	—	—	3	6,468	112	2,194,629
Winslow	8	141,100	—	—	—	—	4	15,100	12	156,200
PIMA CO.	776	17,715,243	63	61,555,468	1	10,000	574	3,888,602	1,414	83,169,313
Marana	—	—	—	—	—	—	—	—	—	—
Oro Valley	4	230,000	—	—	—	—	—	—	4	230,000
South Tucson	8	12,250	—	—	—	—	8	13,500	16	25,750
Tucson	336	6,769,983	27	7,801,038	—	—	221	1,795,949	584	16,366,970
Unincorporated	428	10,703,010	36	53,754,430	1	10,000	345	2,079,153	810	66,546,593
PINAL CO.	139	3,244,405	13	1,574,068	2	290,700	66	353,559	220	5,462,732
Apache Junction	37	972,437	4	487,192	2	290,700	29	60,832	72	1,811,161
Casa Grande	41	1,469,318	7	1,011,876	—	—	10	115,915	58	2,597,109
Coolidge	8	18,500	—	—	—	—	—	—	8	18,500
Eloy	1	1,110	—	—	—	—	1	600	2	1,710
Florence	1	29,500	—	—	—	—	1	500	2	30,000
Kearny	1	8,000	—	—	—	—	—	—	1	8,000
Mammoth	1	—	—	—	—	—	—	—	1	—
Superior	1	2,000	1	10,000	—	—	5	38,000	7	50,000
Unincorporated	48	743,540	1	65,000	—	—	20	137,712	69	946,252
SANTA CRUZ CO.	12	729,210	—	—	1	90,000	4	124,000	17	943,210
Nogales	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R	N/R
Patagonia	2	48,000	—	—	—	—	1	9,000	3	57,000
Unincorporated	10	681,210	—	—	1	90,000	3	115,000	14	886,210
YAVAPAI CO.	308	6,389,597	11	338,217	2	89,400	76	601,241	397	7,418,455
Chino Valley	20	312,100	—	—	—	—	6	125,350	26	437,450
Clarkdale	5	19,980	—	—	—	—	2	1,095	7	21,075
Cottonwood	11	172,565	—	—	—	—	5	70,453	16	243,018
Jerome	2	5,500	—	—	—	—	—	—	2	5,500
Prescott	57	830,246	4	107,057	1	71,400	26	39,050	88	1,047,753
Prescott Valley	48	756,310	2	69,160	—	—	—	—	50	825,470
Unincorporated	165	4,292,896	5	162,000	1	18,000	37	365,293	208	4,838,189
YUMA CO.	98	1,295,101	11	469,876	—	—	30	285,066	139	2,050,043
Parker	4	57,800	—	—	—	—	1	1,000	5	58,800
Somerton	6	128,803	—	—	—	—	2	11,000	8	139,803
Unincorporated	54	732,350	4	190,580	—	—	10	160,705	68	1,083,635
Wellton	—	—	—	—	—	—	—	—	—	—
Yuma	34	376,148	7	279,296	—	—	17	112,361	58	767,805
Total Maricopa Co. July, 1981	1,494	37,251,646	297	49,585,980	58	17,728,514	1,545	20,025,356	3,394	124,591,496
Total Maricopa Co. July, 1980	2,493	67,834,986	143	28,868,185	43	16,153,267	1,994	27,408,182	4,673	140,264,620
Percent Change	-40	-45	107	71	34	9	-22	-26	-27	-11
Total Arizona, July, 1981	3,645	79,697,427	448	120,327,257	73	18,264,370	2,698	27,201,900	6,864	245,490,954
Total Arizona, July, 1980	4,821	116,951,308	272	46,283,075	50	16,211,267	3,191	61,249,957	8,334	245,383,914
Percent Change	-24	-31	64	159	45	12	-15	-55	-17	—

N/R: No Report

*Includes Mobile Homes

Arizona New Housing Starts: Monthly Report

JULY, 1981

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
APACHE CO.	18	—	1	—	—	20
Eagar	3	—	1	—	—	5
St. Johns	1	—	—	—	—	1
Springerville	3	—	—	—	—	3
Unincorporated	11	—	—	—	—	11
COCHISE CO.	19	29	—	—	—	48
Benson	1	2	—	—	—	3
Bisbee	—	—	—	—	—	—
Douglas	2	—	—	—	—	2
Huachuca City	—	—	—	—	—	—
Sierra Vista	2	6	—	—	—	8
Tombstone	2	—	—	—	—	2
Unincorporated	10	21	—	—	—	31
Willcox	2	—	—	—	—	2
COCONINO CO.	63	59	—	1	—	125
Flagstaff	19	—	—	1	—	22
Fredonia	—	—	—	—	—	—
Page	2	14	—	—	—	16
Unincorporated	42	44	—	—	—	86
Williams	—	1	—	—	—	1
GILA CO.	35	14	—	—	—	49
Globe	1	—	—	—	—	1
Hayden	—	—	—	—	—	—
Miami	—	—	—	—	—	—
Payson	17	6	—	—	—	23
Unincorporated	17	8	—	—	—	25
GRAHAM CO.	4	11	—	—	—	15
Pima	—	—	—	—	—	—
Safford	1	2	—	—	—	3
Thatcher	—	2	—	—	—	2
Unincorporated	3	7	—	—	—	10
GREENLEE CO.	5	—	—	—	—	5
Clifton	2	—	—	—	—	2
Duncan	—	—	—	—	—	—
Unincorporated	3	—	—	—	—	3
MARICOPA CO.	743	138	2	10	12	1,071
Avondale	1	—	—	—	—	1
Buckeye	—	1	—	—	—	1
Chandler	43	—	—	—	—	43
El Mirage	—	—	—	—	—	—
Gila Bend	—	—	—	—	—	—
Gilbert	6	—	—	2	—	14
Glendale	85	—	—	—	—	85
Goodyear	—	—	—	—	—	—
Guadalupe	—	—	—	—	—	—
Mesa	32	—	—	—	—	32
Paradise Valley	5	—	—	—	—	5
Peoria	19	—	—	—	—	19
Phoenix	148	28	1	3	7	296
Scottsdale	90	—	—	—	—	90
Surprise	1	—	—	—	—	1
Tempe	157	—	1	5	—	179
Tolleson	2	—	—	—	2	27
Unincorporated	154	109	—	—	3	278
Wickenburg	—	—	—	—	—	—
Youngtown	—	—	—	—	—	—

BUILDING PERMITS ISSUED

	1 Family	Mobile Homes	Duplex	3-4 Families	5 or More	Total Units
MOHAVE CO.	42	88	3	2	2	209
Kingman City	6	1	3	1	—	17
Kingman Area	5	35	—	—	—	40
Lake Havasu City	10	—	—	1	2	79
Lake Havasu Area	—	2	—	—	—	2
Mohave Valley N.	11	29	—	—	—	40
Mohave Valley S.	5	10	—	—	—	15
Dolan Springs	1	6	—	—	—	7
Sacramento Val.	1	4	—	—	—	5
Mohave General	3	1	—	—	—	4
NAVAJO CO.	60	11	—	—	—	71
Holbrook	—	—	—	—	—	—
Show Low	3	2	—	—	—	3
Snowflake	1	—	—	—	—	1
Taylor	—	4	—	—	—	4
Unincorporated	54	5	—	—	—	59
Winslow	4	—	—	—	—	4
PIMA CO.	311	233	14	4	6	719
Marana	—	—	—	—	—	—
Oro Valley	2	—	—	—	—	2
South Tucson	—	—	—	—	—	—
Tucson	129	51	14	4	6	355
Unincorporated	180	182	—	—	—	362
PINAL CO.	68	43	2	4	4	179
Apache Jct.	19	14	—	1	—	37
Casa Grande	33	—	2	2	4	93
Coolidge	—	1	—	—	—	1
Eloy	—	—	—	—	—	—
Florence	1	—	—	—	—	1
Kearny	—	—	—	—	—	—
Mammoth	—	—	—	—	—	—
Superior	—	—	—	—	—	—
Unincorporated	15	28	—	1	—	47
SANTA CRUZ CO.	10	—	—	—	—	10
Nogales	N/R	N/R	N/R	N/R	N/R	N/R
Patagonia	—	—	—	—	—	—
Unincorporated	10	—	—	—	—	10
YAVAPAI CO.	116	61	3	1	—	187
Chino Valley	5	6	—	—	—	11
Clarkdale	—	1	—	—	—	1
Cottonwood	1	2	—	—	—	3
Jerome	—	—	—	—	—	—
Prescott	19	1	—	—	—	20
Prescott Valley	20	12	3	—	—	38
Unincorporated	71	39	—	1	—	114
YUMA CO.	18	34	1	—	—	54
Parker	1	1	—	—	—	2
Somerton	3	—	—	—	—	3
Unincorporated	9	31	—	—	—	40
Wellton	—	—	—	—	—	—
Yuma	5	2	1	—	—	9
Total, Maricopa Co., July 1981	743	138	2	10	12	1,071
Total, Maricopa Co., July 1980	919	150	31	25	54	2,189
Percent Change	-19	-7	-93	-59	-77	-51
Total, Arizona July 1981	1,512	721	26	22	24	2,762
Total, Arizona July 1980	1,768	633	38	33	59	3,944
Percent Change	-14	13	-31	-33	-59	-29

N/R: No Report.

Retail Food Prices

JULY, 1981

Retail food prices in Maricopa County rose 0.5 percent in July, following a 0.9 percent gain in June. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The July index of 267.1 indicates that shoppers would now have to pay \$26.71 for a basket of foods that would have cost \$10.00 in 1967. These foods could have been purchased for \$24.10 one year ago. The July, 1981, index reflects a 10.8 percent increase over July, 1980, value.

Gains were noted for *Meats, Poultry, Fish, and Eggs* (2.5 percent) and *Cereals and Bakery Products* (0.4 percent). *Fruits and Vegetables* fell 1.8 percent, while *Dairy Products* and *Other Foods* were unchanged.

Sharp increases in chicken prices contributed to the gain in *Meats, Poultry, Fish, and Eggs* during July. Fresh whole chicken soared 22.2 percent, followed by fresh/frozen chicken parts (12.4 percent). Pork prices also rose, notably bacon (12.9 percent), pork other than bacon, chops, ham, and sausage (9.2 percent), and pork chops (5.5 percent). Partially counteracting these advances were reductions in the miscellaneous beef category (-6.6 percent), primarily due to lower prices for beef short ribs.

Minor price fluctuations in the *Cereals and Bakery Products* subgroup led to the overall 0.4 percent increase. Cereal rose 2.7 percent, while higher prices for

rice led to a 1.7 percent increase in the category of rice, macaroni, and cornmeal.

The decline in the *Fruits and Vegetables* subgroup, the first decline since November, 1980, was caused mainly by lower prices for several fruits in the category of fresh fruits other than apples, bananas, and oranges (-22.8 percent). Tomato prices plunged 15.1 percent, while falling prices for carrots, celery, and cucumbers contributed to the 4.1 percent decline in the miscellaneous fresh vegetables category. Higher prices were noted for oranges (up 12.6 percent), bananas (4.5 percent), and lettuce (3.8 percent).

Prices were relatively stable in the *Dairy Products* subgroup in July, resulting in no change in the subgroup's index value. However, although there was also no overall change posted for the *Other Foods* subgroup, there were several notable price changes within that subgroup. Margarine dropped 5.9 percent, followed by sugar/artificial sweeteners (-5.1 percent) and frozen prepared food (-3.5 percent). Offsetting these declines were gains in several categories, notably miscellaneous canned/packaged prepared foods (3.1 percent), and nuts, potato chips, and other snacks (2.0 percent).

A comparison of June, 1981, Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a food group in June, 1981 (obtainable for an outlay of \$10.00 at 1967 average prices), were \$26.56 in Maricopa County; \$26.98 in Los Angeles-Long Beach; \$26.64 in San Francisco-Oakland; \$26.81 in Chicago-Northwestern Indiana; and averaged \$26.87 in the United States.

TABLE 1
INDEX FOR FOOD CONSUMED AT HOME
Maricopa County, United States, and Selected Metropolitan Areas
(Average 1967 = 100 percent)

Group	Maricopa County July '81 ^a	Maricopa County June '81 ^b	United States * June '81	Los Angeles Long Beach * June '81	San Francisco Oakland * June '81	Chicago North- western Indiana * June '81
Food Consumed at Home	267.1	265.6	268.7	269.8	266.4	268.1
• Cereals and Bakery Products	256.6	255.5	271.5	285.5	279.9	278.1
Meats, Poultry, Fish, and Eggs	264.1	257.6	248.7	247.9	244.9	252.7
Dairy Products	232.3	232.3	243.8	238.2	239.9	234.0
Fruits and Vegetables	268.9	273.8	278.1	268.0	262.8	276.5
Other Foods Consumed at Home	295.0	295.0	323.6	328.5	332.6	325.8

*Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

^aMaricopa County food prices are reported for the month closest to publication.

^bComparisons of food prices among various cities and the United States average are made on the basis of an earlier month because of the lag in collecting price reports from these other areas.

Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual difference in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Retail Food Prices

AUGUST, 1981

Retail food prices in Maricopa County rose only 0.3 percent in August, following a 0.5 percent increase in July. The food price survey is compiled by the Bureau of Business and Economic Research, College of Business Administration, at Arizona State University. Cosponsor of the study is Valley National Bank. The August index of 268.0 indicates that shoppers would now have to pay \$26.80 for a basket of foods that would have cost \$100% in 1967. These goods could have been purchased for \$24.47 one year ago. The August, 1981, index reflects a 9.5 percent increase over the August, 1980, value.

This month's increase was the result of slight gains in all but one subgroup. *Fruits and Vegetables* rose 1.5 percent, followed by *Meats, Poultry, Fish, and Eggs* (0.4 percent), *Cereals and Bakery Products* (0.2 percent), and *Dairy Products* (0.1 percent). *Other Foods* declined 0.1 percent.

All but three categories in the *Fruits and Vegetables* subgroup posted increases this month. Tomato prices rose 11.6 percent, followed by apples (9.9 percent) and miscellaneous fresh fruits (9.8 percent). The three categories with price reductions were oranges (-34.4 percent), potatoes (-6.3 percent), and bananas (-6.1 percent).

The overall 0.4 percent increase in the *Meats, Poultry, Fish, and Eggs* subgroup does not reflect the many price changes that occurred within this subgroup during August. Sizable gains were noted for eggs (7.6 percent), round steak (7.1 percent), and poultry other than fresh chicken and frozen chicken parts (6.9 percent). These increases were moderated by falling prices in the miscellaneous pork category (-6.1 percent), followed by pork chops (-5.3 percent), fresh whole chicken (-4.4 percent), and sirloin steak (-4.0 percent).

Price changes were relatively minor in both *Dairy Products* and *Cereals and Bakery Products*, resulting in small overall gains in the subgroups. A 6.3 percent decline for ice cream and related products was unable to completely offset increases in other *Dairy Products* categories, notably miscellaneous dairy products (up 3.3 percent), and cheese (1.4 percent). In the *Cereals and Bakery Products* subgroup, climbing prices for rice continue to account for the increases in the category of rice, macaroni, and cornmeal, which rose 2.4 percent this month. Other gains were noted for fresh biscuits, rolls, and muffins (4.2 percent) and for flour and prepared flour mixes (1.3 percent). The 3.9 percent drop in the sweet roll, coffeecake, and doughnut category was primarily due to store specials.

Decreases were posted in many categories in the *Other Foods* subgroup this month. Roasted coffee prices, which have dropped each month since October, 1980, fell an additional 3.1 percent in August. Prices also decreased for freeze-dried and instant coffee (-1.4 percent), other noncarbonated beverages excluding coffee (-1.3 percent), and cola drinks, excluding diet cola (-1.1 percent). These declines were partially offset by higher prices for margarine (4.0 percent), frozen prepared food (2.3 percent), and sugar/artificial sweeteners (1.4 percent).

A comparison of July, 1981, Food Consumed at Home for Maricopa County with index values for four selected metropolitan areas reveals that the outlays required to purchase a food group in July (obtainable for an outlay of \$10.00 at 1967 average prices) were \$26.71 in Maricopa County; \$27.06 in Los Angeles-Long Beach; \$27.23 in San Francisco-Oakland; \$26.94 in Chicago-Northwestern Indiana; and averaged \$27.16 in the United States.

TABLE 1

INDEX FOR FOOD CONSUMED AT HOME
Maricopa County, United States, and Selected Metropolitan Areas
(Average 1967 = 100 percent)

	Maricopa County	Maricopa County	United States *	Los Angeles Long Beach *	San Francisco Oakland *	Chicago North- western Indiana *
Group	Aug. '81 ^a	July '81 ^b	July '81	July '81	July '81	July '81
Food Consumed at Home	268.0	267.1	271.6	270.6	272.3	269.4
Cereals and Bakery Products	257.2	256.6	272.4	284.2	281.8	275.7
Meats, Poultry, Fish, and Eggs	265.2	264.1	254.1	252.0	256.4	255.7
Dairy Products	232.5	232.3	244.2	239.3	240.9	233.8
Fruits and Vegetables	272.3	268.9	284.4	263.2	268.1	286.1
Other Foods Consumed at Home	294.7	295.0	323.3	329.1	336.2	322.6

*Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

^aMaricopa County food prices are reported for the month closest to publication.

^bComparisons of food prices among various cities and the United States average are made on the basis of an earlier month because of the lag in collecting price reports from these other areas.

Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

Food Price Comparisons:

APRIL, MAY, 1981

Editor's Note: New procedures have enabled comparison food prices to be somewhat more current than was possible previously. The June/July issue of Arizona Business carried comparison figures for February and March, 1981. This issue carries comparison tables for

June and July in the articles on the previous pages. The following tables of comparison food prices for the interim months of April and May are given to provide a continuous series for the convenience of readers who need to maintain continuity of information.

TABLE 1

APRIL INDEX FOR FOOD CONSUMED AT HOME Maricopa County, United States, and Selected Metropolitan Areas (Average 1967 = 100 percent)

Group	Maricopa County Apr. '81	United States* Apr. '81	Los Angeles Long Beach* Apr. '81	San Francisco Oakland* Apr. '81	Chicago North- western Indiana* Apr. '81
Food Consumed at Home	259.2	268.7	269.2	270.9	268.3
Cereals and Bakery Products	250.1	268.3	282.9	278.4	272.9
Meats, Poultry, Fish, and Eggs	255.4	247.7	248.2	252.0	252.4
Dairy Products	231.4	243.5	238.2	239.0	233.6
Fruits and Vegetables	251.8	281.9	268.3	274.1	278.8
Other Foods Consumed at Home	289.0	324.7	326.6	335.5	328.8

*Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.

TABLE 2

MAY INDEX FOR FOOD CONSUMED AT HOME Maricopa County, United States, and Selected Metropolitan Areas (Average 1967 = 100 percent)

Group	Maricopa County May '81	United States* May '81	Los Angeles Long Beach* May '81	San Francisco Oakland* May '81	Chicago North- western Indiana* May '81
Food Consumed at Home	263.2	267.7	269.3	266.9	265.7
Cereals and Bakery Products	252.0	270.0	282.9	279.6	273.7
Meats, Poultry, Fish, and Eggs	256.6	247.0	246.2	249.1	249.5
Dairy Products	232.9	243.8	238.4	237.6	230.9
Fruits and Vegetables	262.1	276.8	270.1	257.1	273.2
Other Foods Consumed at Home	294.7	321.3	328.6	334.2	326.7

*Computed from data contained in *The Consumer Price Index*, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

Note: Index comparisons between Maricopa County and the other regions show only that food prices in Maricopa County have increased more or less than food prices in the other regions since 1967. The indexes cannot be used to determine the actual differences in food price levels between the regions.

Source: Bureau of Business and Economic Research, College of Business Administration, Arizona State University, in cooperative cosponsorship with Valley National Bank.